**Winnebago Reclamation Service, Inc.**



Thomas Hilbert
Environmental Engineer
Winnebago Reclamation
8403 Lindenwood Rd.
Rockford, IL 61109
(815) 874-4806
June 13, 1994

Recycling and
waste disposal

Mr. Bernie Schorle
Remedial Project Manager
United State Environmental Protection Agency
Region V
77 West Jackson Boulevard
Chicago, IL 60604-3590
Re: Landfill Management Work Plan



Dear Bernie:

4920 Forest
Hills Road
Loves Park
Illinois 61111

Enclosed are 3 copies of the Landfill Management, Closure and Monitoring Remedial Design Work Plan for your review and approval.

It is our intent to allow this work plan to establish the application for "Significant Modification" of our state operating permit as a comprehensive remedial design and planning document that would incorporate design, sampling and quality assurance plans. In addition, scheduling and implementation plans would be included in the "Sig Mod" application.

In addition, I have included copies of our most recent landfill gas analysis and a copy of our notification to the state on a confirmation of a significant increase of Manganese in well G104.

P.O. Box 2071
Loves Park
Illinois 61130

If you have any questions, please feel free to give me a call.

Sincerely,

Thomas Hilbert

815.654.5952
Fax 815.654.4717

# LANDFILL MANAGEMENT, CLOSURE AND MONITORING REMEDIAL DESIGN WORK PLAN

## WINNEBAGO RECLAMATION LANDFILL SITE (PAGEL'S LANDFILL) WINNEBAGO COUNTY, ILLINOIS

May 1994

PREPARED BY:

WINNEBAGO RECLAMATION SERVICE, INC.
ROCKFORD, ILLINOIS

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## APPENDICES

# 1

# INTRODUCTION

This Landfill Management, Closure, and Monitoring Remedial Design Work Plan (Landfill Management RD Work Plan) describes the overall approach to the remedial design for the following:

- Landfill Final Cover System
- The Leachate Management System
- The Landfill Gas Management System
- Groundwater, soil gas, leachate, air, and water supply monitoring.

For Convenience, these Remedial Action Components are referred to as The Landfill Management Remedial Actions. This Work Plan has been developed in accordance with the Consent Decree, the Record of Decision, the Statement of Work and the RD/RA Work Plan for Winnebago Reclamation Service' Pagel's Landfill (WRS) site located in Winnebago County, Illinois. It contains information supplemental to the RD/RA Work Plan that is specific to the Landfill Management Remedial Actions. The purpose of this Landfill Management RD Work Plan is to establish the approach that will be used to complete the remedial project design documents for the Landfill Management Remedial Actions and provide a schedule for submittal of the document(s). This Work Plan includes:

- Identification of the RD/RA project design document(s).
- A summary of required reports and submissions
- A schedule for submittal of the Landfill Final Cover, Leachate Management, and Gas Management Remedial Design.
- A schedule for submitting proposed groundwater, soil gas, leachate, air and water supply monitoring not associated with the groundwater extraction and treatment system.

Background information on the WRS site is addressed Chapter 2 of the overall RD/RA work Plan. Additional information regarding proposed remedies and the selection of the Remedial Action may be found in the WRS Feasibility Study, Record of Decision, and the Statement of Work.

# 2

# RD PLANNING DOCUMENTS

Companion planning documents to the Landfill Management RD Work Plan have been prepared under separate cover to address specific activities that will be conducted during preparation of the remedial design and implementation of the remedial action at the site. These planning documents are identified and discussed below.

## 2.1 SITE ACCESS AND PERMITTING PLAN

The Site Access and Permitting Plan (SAPP) for the WRS Site is included in the RD/RA Work Plan. No additional plan or permits for the Landfill Management RD/RA are anticipated at this time.

## 2.2 QUALITY ASSURANCE PROJECT PLAN

A Quality Assurance Project Plan (QAPP) has been prepared under a separate cover for the WRS site that is specific to groundwater sampling and analysis performed during the design process. It is not anticipated that any changes or additions will be required to the protocols outlined in the existing QAPP for monitoring the groundwater in accordance with the Landfill Management RD/RA. QAPPs have not yet been submitted for the design components included in the Landfill Management Remedial Actions which require testing of different media (soil, soil gas, air, and leachate). QA/QC procedures for testing the soil, soil gas, air and leachate will be provided as needed in the design documentation for each remedial action component. A separate QAPP for any or all of the media except groundwater may be required and will be provided upon request.

## 2.3 SAMPLING PLAN

A separate Sampling Plan (SP) for the Landfill Management RD/RA is not required. Sampling Plans will be developed for each design component as necessary and presented in the design documentation for that component.

## 2.4 HEALTH AND SAFETY PLAN

A site-specific overall RD/RA Health and Safety Plan (RD/RA HASP) has been developed for the WRS Pagel's Landfill under a separate cover. The RD/RA HASP has been prepared to protect on-site personnel from potential physical, chemical and other hazards encountered during RD/RA activities. Separate health and safety issues specific to a particular remedial action task may require modification of the overall RD/RA HASP. Specific health and safety issues not addressed in the RD/RA HASP will be identified in the design documentation for the individual remedial action components.

# 3

# REMEDIAL DESIGN

Design plans and specifications for the Landfill Management RD/RA will be prepared in accordance with Section 5 of the RD/RA Work Plan and Section III(C) of the SOW. Design plans will be submitted for USEPA review and approval. The Consent Decree and Statement of Work require submittal of design documents in a minimum of two phases.

Under the ROD and the SOW, the design of the Landfill Management Remedial Actions is to be governed by the Illinois solid waste regulations which apply to non-hazardous waste landfills. These regulations appear under Illinois Administrative Code Title 35 Parts 810-814 (35 IAC Parts 810-814). Subsequent to the approval of the ROD and the SOW, these regulations were amended by the adoption of the RCRA Subtitle D standards applicable to Municipal Solid Waste Landfills, both the ROD and the SOW incorporate these subsequent amendments. The SOW provides that the Remedial Actions which are specifically to be performed in accordance with Illinois solid waste landfill regulations are as follows:

- Final Cover
- Leachate Management
- Landfill Gas Management
- Groundwater, Soil Gas, Leachate, and Air Monitoring

For each of these actions, the SOW requires the submittal of the following items, as appropriate for individual component design:

- Design plans and specifications.
- Construction Quality Assurance Plan (CQAP).
- Operation and Maintenance Plans.
- Field Sampling Plan (FSP).
- Construction Schedule.
- Construction cost estimates.
- Post closure maintenance cost estimates.
- Final design drawings.

As defined at 35 IAC Part 810, an application for a "Significant Modification" ("Sig Mod") is a comprehensive permit application in which WRS will upgrade the components of the landfill so that they are in compliance with the current Illinois regulations which relate to non-hazardous waste landfills and Municipal Solid Waste Landfills at 35 IAC, Parts 810-814. The components of the landfill which are to be addressed in the "Sig Mod" application include:

- Final Cover
- Leachate Management
- Landfill Gas Management
- Groundwater, Soil Gas, Leachate, and Air Monitoring

Under this Landfill Management RD Work Plan, the design submittals for the individual components of the Landfill Management Remedial Actions will be made using the "Sig Mod" application. The "Sig Mod" application will contain all of the designs and documentation necessary to meet the requirements of the Consent Decree and SOW for the Landfill Management Remedial Actions. The first design submittal will be the preliminary design (30% complete) and contain sufficient information to allow a determination of whether or not the final design will provide an effective remedial action. The preliminary design will contain all of the necessary design documentation required to allow the same materials to be filed with the Illinois Environmental Protection Agency (IEPA) in the Application for Significant Modification of the facilities IEPA operating permit according to the terms outlined at 35 IAC Part 813. The second submittal will be the final design (100% complete) and will address comments and concerns expressed during the review of the preceding submittal. If necessary additional information will be provided in supplements to the final design documents.

Since the designs are governed under Illinois state regulations, the design submittals will be presented in the format utilized by the Illinois Environmental Protection Agency - Division of Land Pollution Control (IEPA-DLPC). All of the designs, plans, and documentation will be presented as a single document. In all cases the designs will adhere to the more stringent design standards of either the state regulations or the requirements outlined in the Consent Decree, ROD, and SOW.

The entire "Sig Mod" documentation will be provided to the USEPA for review. Since the USEPA is not responsible for reviewing the entire document, those sections applicable for review by the USEPA under the SOW will be identified during submittal. Those portions of the design documentation not expressly required under the SOW will, however, be open to comments from the USEPA. To minimize the amount of dual review, acceptance of designs not required under the SOW will be at the sole discretion of the IEPA. The scheduled submittal date for the design documentation is July 1, 1994.

# APPENDIX A
## TITLE 35 ILLINOIS ADMINISTRATIVE CODE PARTS 810-814

SUBTITLE G: WASTE DISPOSAL
CHAPTER I: POLLUTION CONTROL BOARD
SUBCHAPTER i: SOLID WASTE AND SPECIAL WASTE HAULING

PART 810
SOLID WASTE DISPOSAL: GENERAL PROVISIONS

Section
810.101 Scope and Applicability
810.102 Severability
810.103 Definitions
810.104 Incorporations by Reference

AUTHORITY: Implementing Sections 5, 21, 21.1, 22 and 22.17, and authorized by Section 27 of the Environmental Protection Act (Ill. Rev. Stat. 1989, ch. 111 1/2, pars. 1005, 1021, 1021.1, 1022, 1022.17 and 1027).
SOURCE: Adopted in R88-7 at 14 Ill. Reg. 15838, effective September 18, 1990.
NOTE: Capitalization indicates statutory language.

Section 810.101 Scope and Applicability

This Part applies to all solid waste disposal facilities regulated pursuant to 35 Ill. Adm. Code 811 through 815. This Part does not apply to hazardous waste management facilities regulated pursuant to 35 Ill. Adm. Code 700 through 750.

Section 810.102 Severability

If any provision of this Part or of 35 Ill. Adm. Code 811 through 815 or its application to any person or under any circumstances is adjudged invalid, such adjudication shall not affect the validity of this Part or of 35 Ill. Adm. Code 811 through 815 as a whole or of any portion not adjudged invalid.

Section 810.103 Definitions

Except as stated in this Section, or unless a different meaning of a word or term is clear from the context, the definition of words or terms in this Part shall be the same as that applied to the same words or terms in the Environmental Protection Act (Act) (Ill. Rev. Stat. 1989, ch. 111 1/2, pars. 1001 et. seq.):

"Act" means the Environmental Protection Act, Ill. Rev. Stat. 1989, ch. 111 1/2, pars. 1001 et. seq.

"AGENCY" IS THE ENVIRONMENTAL PROTECTION AGENCY ESTABLISHED BY THE ENVIRONMENTAL PROTECTION ACT. (Section 3.08 of the Act.)

"Admixtures" are chemicals added to earth materials to improve for a specific application the physical or chemical properties of the earth materials. Admixtures include, but are not limited to: lime, cement, bentonite and sodium silicate.

"Applicant" means the person, submitting an application to the Agency for a permit for a solid waste disposal facility.

"AQUIFER" MEANS SATURATED (WITH GROUNDWATER) SOILS AND GEOLOGIC MATERIALS WHICH ARE SUFFICIENTLY PERMEABLE TO READILY YIELD ECONOMICALLY USEFUL QUANTITIES OF WATER TO WELLS, SPRINGS, OR STREAMS UNDER ORDINARY HYDRAULIC

GRADIENTS and whose boundaries can be identified and mapped from hydrogeologic data. (Section 3 of the Illinois Groundwater Protection Act (Ill. Rev. Stat. 1989, ch. 111 1/2, par. 7453).)

"Bedrock" means the solid rock formation immediately underlying any loose superficial material such as soil, alluvium or glacial drift.

"BOARD" IS THE POLLUTION CONTROL BOARD ESTABLISHED BY THE ACT. (Section 3.04 of the Act.)

"Borrow area" means an area from which earthen material is excavated for the purpose of constructing daily cover, final cover, a liner, a gas venting system, roadways or berms.

"Chemical waste" means a non-putrescible solid whose characteristics are such that any contaminated leachate is expected to be formed through chemical or physical processes, rather than biological processes, and no gas is expected to be formed as a result.

"Contaminated leachate" means any leachate whose constituent violate the standards of 35 Ill. Adm. Code 811.202.

"Design Period" means that length of time determined by the sum of the operating life of the solid waste landfill facility plus the postclosure care period necessary to stabilize the waste in the units.

"DISPOSAL" MEANS THE DISCHARGE, DEPOSIT, INJECTION, DUMPING, SPILLING, LEAKING OR PLACING OF ANY SOLID WASTE INTO OR ON ANY LAND OR WATER OR INTO ANY WELL SUCH THAT SOLID WASTE OR ANY CONSTITUENT OF THE SOLID WASTE MAY ENTER THE ENVIRONMENT BY BEING EMITTED INTO THE AIR OR DISCHARGED INTO ANY WATERS, INCLUDING GROUNDWATER. (Section 3.08 of the Act.) If the solid waste is accumulated and not confined or contained to prevent its entry into the environment, or there is no certain plan for its disposal elsewhere, such accumulation shall constitute disposal.

"Disturbed areas" means those areas within a facility that have been physically altered during waste disposal operations or during the construction of any part of the facility.

"Documentation" means items, in any tangible form, whether directly legible or legible with the aid of any machine or device, including but not limited to affidavits, certificates, deeds, leases, contracts or other binding agreements, licenses, permits, photographs, audio or video recordings, maps, geographic surveys, chemical and mathematical formulas or equations, mathematical and statistical calculations and assumptions, research papers, technical reports, technical designs and design drawings, stocks, bonds and financial records, that are used to support facts or hypotheses.

"Earth liners" means structures constructed from naturally occurring soil material that has been compacted to achieve a low permeability.

"Existing facility" or "Existing unit" means a facility or unit which is not defined in this Section as a new facility or a new unit.

"Existing MSWLF unit" means any municipal solid waste landfill unit that has received household waste before October 9, 1993. (Section 3.87 of the Act)

Revised 2/15/94

"Facility" means a site and all equipment and fixtures on a site used to treat, store or dispose of solid or special wastes. A facility consists of an entire solid or special waste treatment, storage or disposal operation. All structures used in connection with or to facilitate the waste disposal operation shall be considered a part of the facility. A facility may include, but is not limited to, one or more solid waste disposal units, buildings, treatment systems, processing and storage operations, and monitoring stations.

"Field capacity" means that maximum moisture content of a waste, under field conditions of temperature and pressure, above which moisture is released by gravity drainage.

"Gas collection system" means a system of wells, trenches, pipes and other related ancillary structures such as manholes, compressor housing, and monitoring installations that collects and transports the gas produced in a putrescible waste disposal unit to one or more gas processing points. The flow of gas through such a system may be produced by naturally occurring gas pressure gradients or may be aided by an induced draft generated by mechanical means.

"Gas condensate" means the liquid formed as a landfill gas is cooled or compressed.

"Gas venting system" means a system of wells, trenches, pipes and other related structures that vents the gas produced in a putrescible waste disposal unit to the atmosphere.

"Geomembranes" means manufactured membrane liners and barriers of low permeability used to control the migration of fluids or gases.

"Geotextiles" are permeable manufactured materials used for purposes which include, but are not limited to, strengthening soil, providing a filter to prevent clogging of drains, collecting and draining liquids and gases beneath the ground surface.

"GROUNDWATER" MEANS UNDERGROUND WATER WHICH OCCURS WITHIN THE SATURATED ZONE AND WITHIN GEOLOGIC MATERIALS WHERE THE FLUID PRESSURE IN THE PORE SPACE IS EQUAL TO OR GREATER THAN ATMOSPHERIC PRESSURE. (Section 3 of the Illinois Groundwater Protection Act)

"Household waste" means any solid waste (including garbage, trash, and sanitary waste in septic tanks) derived from households (including single and multiple residences, hotels and motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds, and day-use recreation areas). (Section 3.89 of the Act)

"Hydraulic barriers" means structures designed to prevent or control the seepage of water. Hydraulic barriers include, but are not limited to cutoff walls, slurry walls, grout curtains and liners.

"Inert waste" means any solid waste that will not decompose biologically, burn, serve as food for vectors, form a gas, cause an odor, or form a contaminated leachate, as determined in accordance with Section 811.202(b). Such inert wastes shall include only non-biodegradable and non-putrescible solid wastes. Inert wastes may include, but are not limited to, bricks, masonry and concrete (cured for 60 days or more).

Revised 2/14/94

"Land application unit" means an area where wastes are agronomically spread over or disked into land or otherwise applied so as to become incorporated into the soil surface. For the purposes of this Part and 35 Ill. Adm. Code 811 through 815, a land application unit is not a landfill; however, other Parts of 35 Ill. Adm. Code: Chapter I may apply, and may include the permitting requirements of 35 Ill. Adm. Code 309.

"Landfill" means a unit or part of a facility in or on which waste is placed and accumulated over time for disposal, and which is not a land application unit, a surface impoundment or an underground injection well. For the purposes of this Part and 35 Ill. Adm. Code 811 through 815, landfills include waste piles, as defined in this Section.

"Lateral expansion" means a horizontal expansion of the actual waste boundaries of an existing MSWLF unit occurring on or after October 9, 1993. For purposes of this section, a horizontal expansion is any area where solid waste is placed for the first time directly upon the bottom liner of the unit, excluding side slopes on or after October 9, 1993. (Section 3.88 of the Act)

"Leachate" means liquid that has been or is in direct contact with a solid waste.

"Lift" means an accumulation of waste which is compacted into a unit and over which cover is placed.

"Malodor" means an odor caused by ONE OR MORE CONTAMINANT EMISSIONS INTO THE ATMOSPHERE FROM A FACILITY THAT IS IN SUFFICIENT QUANTITIES AND OF SUCH CHARACTERISTICS AND DURATION AS TO BE described as malodorous and which may be INJURIOUS TO HUMAN, PLANT, OR ANIMAL LIFE, TO HEALTH, OR TO PROPERTY, OR TO UNREASONABLY INTERFERE WITH THE ENJOYMENT OF LIFE OR PROPERTY. (Section 3.02 of the Act (defining "air pollution").)

"Municipal solid waste landfill unit" or "MSWLF unit" means a contiguous area of land or an excavation that receives household waste, and that is not a land application, surface impoundment, injection well, or any pile of noncontainerized accumulations of solid, nonflowing waste that is used for treatment or storage. A MSWLF unit may also receive other types of RCRA Subtitle D wastes, such as commercial solid waste, nonhazardous sludge, small quantity generator waste and industrial solid waste. Such a landfill may be publicly or privately owned or operated. A MSWLF unit may be a new MSWLF unit, an existing MSWLF unit or a lateral expansion. A sanitary landfill is subject to regulation as a MSWLF if it receives household waste. (Section 3.85 of the Act)

"National Pollutant Discharge Elimination System" or "NPDES" means the program for issuing, modifying, revoking and reissuing, terminating, monitoring and enforcing permits and imposing and enforcing pretreatment requirements under the Clean Water Act (33 U.S.C. 1251 et seq.), Section 12(f) of the Environmental Protection Act and 35 Ill. Adm. Code 309.Subpart A and 310. "NPDES permit" means a permit issued under the NPDES program.

"New facility" or "New unit" means a solid waste landfill facility or a unit at a facility, if one or more of the following conditions apply:

It is a landfill or unit exempt from permit requirements pursuant to Section 21(d) of the Act that has not yet accepted any waste as of the effective date of this Part;

It is a landfill or unit not exempt from permit requirements pursuant to Section 21(d) of the Act that has no development or operating permit issued by the Agency pursuant to 35 Ill. Adm. Code 807 as of the effective date of this Part; or

It is a landfill with a unit whose maximum design capacity or lateral extent is increased after the effective date of this Part.
BOARD NOTE: A new unit located in an existing facility shall be considered a unit subject to 35 Ill. Adm. Code 814, which references applicable requirements of 35 Ill. Adm. Code 811.

"New MSWLF unit" means any municipal solid waste landfill unit that has received household waste on or after October 9, 1993 for the first time. (Section 3.86 of the Act)

"One hundred (100) year flood plain" means any land area which is subject to a one percent or greater chance of flooding in a given year from any source.

"One hundred (100) year, 24 hour precipitation event" means a precipitation event of 24 hour duration with a probable recurrence interval of once in 100 years.

"Operator" means the person responsible for the operation and maintenance of a solid waste disposal facility.

"Owner" means a person who has an interest, directly or indirectly, in land, including a leasehold interest, on which a person operates and maintains a solid waste disposal facility. The "owner" is the "operator" if there is no other person who is operating and maintaining a solid waste disposal facility.

"Perched watertable" means an elevated watertable above a discontinuous saturated lens, resting on a low permeability (such as clay) layer within a high permeability (such as sand) formation.

"Permit area" means the entire horizontal and vertical region occupied by a permitted solid waste disposal facility.

"PERSON" IS ANY INDIVIDUAL, PARTNERSHIP, CO-PARTNERSHIP, FIRM, COMPANY, CORPORATION, ASSOCIATION, JOINT STOCK COMPANY, TRUST, ESTATE, POLITICAL SUBDIVISION, STATE AGENCY, OR ANY OTHER LEGAL ENTITY, OR THEIR LEGAL REPRESENTATIVE, AGENT OR ASSIGNS. (Section 3.26 of the Act.)

"Professional engineer" means a person who has registered and obtained a seal pursuant to "The Illinois Professional Engineering Act" (Ill. Rev. Stat 1989, ch. 111, par. 5101 et seq.).

"Professional land surveyor" means a person who has received a certificate of registration and a seal pursuant to "The Land Surveyors Act" (Ill. Rev. Stat. 1989, ch. 111, par. 3201 et seq.).

"Putrescible waste" means a solid waste that contains organic matter capable of being decomposed by microorganisms so as to cause a malodor, gases, or other offensive conditions, or which is capable of providing food for birds and vectors. Putrescible wastes may form a contaminated leachate from microbiological degradation, chemical processes, and physical processes. Putrescible waste includes, but is not limited to, garbage, offal, dead animals, general household waste, and commercial waste. All solid wastes which do not

meet the definitions of inert or chemical wastes shall be considered putrescible wastes.

"Publicly owned treatment works" or "POTW" means a treatment works that is owned by the State of Illinois or a unit of local government. This definition includes any devices and systems used in the storage, treatment, recycling and reclamation of municipal sewage or industrial wastewater. It also includes sewers, pipes and other conveyances only if they convey wastewater to a POTW treatment plant. The term also means the unit of local government which has jurisdiction over the indirect discharges to and the discharges from such a treatment works.

"Resource Conservation Recovery Act" "RCRA" means the Resource Conservation and Recovery Act of 1976 (P.L. 94-580 Codified as 42 USC. Section 6901 et seq.) as amended. (Section 3.90 of the Act)

"Recharge zone" means an area through which water can enter an aquifer.

"Responsible charge," when used to refer to a person, means that the person is normally present at a waste disposal site; directs the day-to-day overall operation at the site; and either is the owner or operator or is employed by or under contract with the owner or operator to assure that the day-to-day operations at the site are carried out in compliance with any Part of 35 Ill. Adm. Code: Chapter I governing operations at waste disposal sites.

"Runoff" means water resulting from precipitation that flows overland before it enters a defined stream channel, any portion of such overland flow that infiltrates into the ground before it reaches the stream channel, and any precipitation that falls directly into a stream channel.

"Salvaging" means the return of waste materials to use, under the supervision of the landfill operator, so long as the activity is confined to an area remote from the operating face of the landfill, it does not interfere with or otherwise delay the operations of the landfill, and it results in the removal of all materials for salvaging from the landfill site daily or separates them by type and stores them in a manner that does not create a nuisance, harbor vectors or cause an unsightly appearance.

"Scavenging" means the removal of materials from a solid waste management facility or unit which is not salvaging.

"Seismic Slope Safety Factor" means the ratio between the resisting forces or moments in a slope and the driving forces or moments that may cause a massive slope failure during an earthquake or other seismic event such as an explosion.

"Settlement" means subsidence caused by waste loading, changes in groundwater level, chemical changes within the soil and adjacent operations involving excavation.

"Shredding" means the mechanical reduction in particle sizes of solid waste. Putrescible waste is considered shredded if 90 percent of the waste by dry weight passes a 3 inch sieve.

"Significant Modification" means a modification to an approved permit issued by the Agency in accordance with Section 39 of the Act and 35 Ill. Adm. Code 813 that is required when one or more of the following changes, considered

significant when that change measured by one or more parameters whose values lie outside the expected operating range of values as specified in the permit, are planned, occur or will occur:

An increase in the capacity of the waste disposal unit over the permitted capacity;
Any change in the placement of daily, intermediate or final cover;
A decrease in performance, efficiency or longevity of the liner system;
A decrease in efficiency or performance of the leachate collection system;
A change in configuration, performance, or efficiency of the leachate management system;
A change in the final disposition of treated effluent or in the quality of the discharge from the leachate treatment or pretreatment system;
Installation of a gas management system, or a decrease in the efficiency or performance of an existing gas management system;
A change in the performance or operation of the surface water control system;
A decrease in the quality or quantity of data from any environmental monitoring system;
A change in the applicable background concentrations or the maximum allowable predicted concentrations;
A change in the design or configuration of the regraded area after development or after final closure;
A change in the amount or type of postclosure financial assurance;
Any change in the permit boundary;
A change in the postclosure land use of the property;
A remedial action necessary to protect groundwater;
Transfer of the permit to a new operator;
Operating authorization is being sought to place into service a structure constructed pursuant to a construction quality assurance program; or
A change in any requirement set forth as a special condition in the permit.

"Sole source aquifer" means those aquifers designated pursuant to Section 1424(e) of the Safe Drinking Water Act of 1974, (42 U.S.C 300h-3).

"Solid Waste" means a waste that is defined in this Section as an inert waste, as a putrescible waste, as a chemical waste or as a special waste, and which is not also defined as a hazardous waste pursuant to 35 Ill. Adm. Code 721.

"SPECIAL WASTE" MEANS ANY INDUSTRIAL PROCESS WASTE, POLLUTION CONTROL WASTE OR HAZARDOUS WASTE, EXCEPT AS DETERMINED PURSUANT TO SECTION 22.9 OF THE ACT and 35 Ill. Adm. Code 808. (Section 3.45 of the Act.)

"Static Safety Factor" means the ratio between resisting forces or moments in a slope and the driving forces or moments that may cause a massive slope failure.

"Surface impoundment" means a natural topographic depression, a man-made excavation, or a diked area into which flowing wastes, such as liquid wastes or wastes containing free liquids, are placed. For the purposes of this Part and 35 Ill. Adm. Code 811 through 815, a surface impoundment is not a landfill. Other Parts of 35 Ill. Adm. Code: Chapter I may apply, including the permitting requirements of 35 Ill. Adm. Code 309.

"Twenty-five (25) year, 24 hour precipitation event" means a precipitation event of 24 hour duration with a probable recurrence interval of once in 25 years.

Revised 2/15/94

"Uppermost aquifer" means the first geologic formation above or below the bottom elevation of a constructed liner or wastes, where no liner is present, which is an aquifer, and includes any lower aquifer that is hydraulically connected with this aquifer within the facility's permit area.

"Unit" means a contiguous area used for solid waste disposal.

"Unit of local government" means a unit of local government, as defined by Article 7, Section 1 of the Illinois Constitution. A unit of local government may include, but is not limited to, a municipality, a county, or a sanitary district.

"Waste pile" means an area on which non-containerized masses of solid, non flowing wastes are placed for disposal. For the purposes of this Part and 35 Ill. Adm. Code 811 through 815, a waste pile is a landfill, unless the operator can demonstrate that the wastes are not accumulated over time for disposal. At a minimum, such demonstration shall include photographs, records or other observable or discernable information, maintained on a yearly basis, that show that within the preceding year the waste has been removed for utilization or disposed elsewhere.

"Waste stabilization" means any chemical, physical or thermal treatment of waste, either alone or in combination with biological processes, which results in a reduction of microorganisms, including viruses, and the potential for putrefaction.

"Working face" means any part of a landfill where waste is being disposed.

"Zone of attenuation" is the three dimensional region formed by excluding the volume occupied by the waste placement from the smaller of the volumes resulting from vertical planes drawn to the bottom of the uppermost aquifer at the property boundary or 100 feet from the edge of one or more adjacent units.

Section 810.104 Incorporations by Reference

a) The Board incorporates the following material by reference:

40 CFR 141.40 (1988).

Auditing Standards--Current Text, August 1, 1990 Edition, available through the American Institute of Certified Public Accountants, 1211 Avenue of the Americas, New York, NY 10036.

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, EPA Publication SW-846 (Third Edition, 1986 as amended by Update I (November, 1990). SW-846 and Update I are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, Ph: (202) 783-3238.

40 CFR 258.Appendix II (1992).

b) This incorporation includes no later amendments or editions.

TITLE 35: ENVIRONMENTAL PROTECTION
SUBTITLE G: WASTE DISPOSAL
CHAPTER I: POLLUTION CONTROL BOARD
SUBCHAPTER i: SOLID WASTE AND SPECIAL WASTE HAULING

# PART 811
# STANDARDS FOR NEW SOLID WASTE LANDFILLS

## SUBPART A: GENERAL STANDARDS FOR ALL LANDFILLS

Section


## SUBPART B: INERT WASTE LANDFILLS

Section


## SUBPART C: PUTRESCIBLE AND CHEMICAL WASTE LANDFILLS

Section

AUTHORITY: Implementing Sections 5, 21, 21.1, 22, 22.17 and 28.1 and

authorized by Section 27 of the Environmental Protection Act (Ill. Rev. Stat. 1989, ch. 111 1/2, pars. 1005, 1021, 1021.1, 1022, 1022.17, 1028.1 and 1027).
SOURCE: Adopted in R88-7 at 14 Ill. Reg. 15861, effective September 18, 1990.
NOTE: Capitalization indicates statutory language.

## SUBPART A: GENERAL STANDARDS FOR ALL LANDFILLS

### Section 811.101 Scope and Applicability

a) The standards of this Part apply to all new landfills, except those regulated pursuant to 35 Ill. Adm. Code 700 through 749. Subpart A contains general standards applicable to all new landfills. Subpart B contains additional standards for new landfills which dispose of only inert wastes. Subpart C contains additional standards for new landfills which dispose of chemical and putrescible wastes.

b) This Part shall not apply until one year after the effective date of this Part to new landfills solely receiving the following wastes generated by the following industries, provided that proposed regulations of general applicability to that industry category are filed with the Board no later than December 1, 1990: wastes generated by foundries and primary steel production facilities and coal combustion wastes generated by electric utilities. The requirements of 35 Ill. Adm. Code 807 shall apply to such landfills during the interim period of one year after the effective date of this Part. This Part shall become effective immediately after Dec. 1, 1990 if no proposal has been filed by that date.

c) All general provisions of 35 Ill. Adm. Code 810 apply to this Part.

d) Standards for Municipal Solid Waste landfills

1) The standards of this Part also apply to all new MSWLF units, as defined at 35 Ill. Adm. Code 810.103. The standards for the new MSWLF units include:

A) The standards applicable to new landfills pursuant to subsection (a); and

B) The standards adopted in this part that are identical-in-substance to the federal regulations promulgated by the U.S. Environmental Protection Agency pursuant to Sections 4004 and 4010 of the RCRA relating to MSWLF program. Such standards are individually indicated as applicable to MSWL units.

2) The Appendix table 811.Appendix B provides a Section-by-Section correlation between the requirements of the federal MSWLF regulations at 40 CFR 258 (1992) and the requirements of this Part.

3) An owner or operator of a MSWLF unit shall also comply with any other applicable Federal rules, laws, regulations, or other requirements.

BOARD NOTE: Subsection (d)(3) is derived from 40 CFR 258.3 (1992).

### Section 811.102 Location Standards

a) The facility shall meet all requirements under the Wild and Scenic

Rivers Act (16 U.S.C. 1271 et seq.).

b) The facility shall not restrict the flow of a 100-year flood, result in washout of solid waste from the 100-year flood, or reduce the temporary water storage capacity of the 100-year floodplain, unless measures are undertaken to provide alternative storage capacity, such as lagoons, holding tanks, or provision of drainage around structures at the facility.

c) The facility shall not be located in areas where it may pose a threat of harm or destruction to the features for which an irreplaceable historic, or archaeological site was listed pursuant to the National Historic Preservation Act (16 U.S.C. 470 et seq.) or the Illinois Historic Preservation Act (Ill. Rev. Stat. 1989, ch. 127, par. 133d1 et seq.) for which a Natural Landmark was designated by the National Park Service or the Illinois State Historic Preservation Officer, or for which a natural area was designated as a Dedicated Illinois Nature Preserve pursuant to the Illinois Natural Areas Preservation Act (Ill. Rev. Stat. 1989, ch. 105 par. 701 et seq.).

d) The facility shall not be located in areas where it may jeopardize the continued existence of any designated endangered species, result in the destruction or adverse modification of the critical habitat listed for such species, or cause or contribute to the taking of any endangered or threatened species of plant, fish or wildlife listed pursuant to the Endangered Species Act 16 U.S.C. 1531 et seq., or the Illinois Endangered Species Protection Act (Ill. Rev. Stat. 1989, ch. 8, par. 331 et seq.).

e) The facility shall not cause a violation of Section 404 of the Clean Water Act (33 U.S.C. 1344).

f) The facility shall not cause a violation of any requirements implementing an area-wide or statewide water quality management plan for nonpoint source pollution that has been approved under Section 208 of the Clean Water Act (33 U.S.C. 1288).

Section 811.103 Surface Water Drainage

a) Runoff From Disturbed Areas

1) Runoff from disturbed areas resulting from precipitation events less than or equal to the 25-year, 24-hour precipitation event that is discharged to waters of the State shall meet the requirements of 35 Ill. Adm. Code 304.

2) All discharges of runoff from disturbed areas to waters of the State shall be permitted by the Agency in accordance with 35 Ill. Adm. Code 309.

3) All treatment facilities shall be equipped with bypass outlets designed to pass the peak flow of runoff from the 100-year, 24-hour precipitation event without damage to the treatment facilities or surrounding structures.

4) All surface water control structures shall be operated until the final cover is placed and erosional stability is provided by the vegetative or other cover meeting the requirements of Section 811.205 or 811.322.

5) All discharge structures shall be designed to have flow velocities that will not cause erosion and scouring of the natural or constructed lining, i.e. the bottom and sides, of the receiving stream channel.

b) Diversion of Runoff From Undisturbed Areas.

1) Runoff from undisturbed areas shall be diverted around disturbed areas unless the operator shows that it is impractical based on site-specific conditions.

2) Diversion facilities shall be designed to prevent runoff from the 25-year, 24-hour precipitation event from entering disturbed areas.

3) Runoff from undisturbed areas which becomes commingled with runoff from disturbed areas shall be handled as runoff from disturbed areas and treated in accordance with subsection (a).

4) All diversion structures shall be designed to have flow velocities that will not cause erosion and scouring of the natural or constructed lining, i.e. the bottom and sides, of the diversion channel and downstream channels.

5) All diversion structures shall be operated until the final cover is placed and erosional stability is provided by the vegetative or other cover meeting the requirements of Section 811.205 or 811.322.

Section 811.104 Survey Controls

a) The boundaries of all waste disposal units, property boundaries, disturbed areas, and the permit area for facilities subject to the requirements of Section 21 of the Environmental Protection Act (Act) (Ill. Rev. Stat. 1989, ch. 111 1/2, par. 1021) shall be surveyed and marked by a professional land surveyor.

b) All stakes and monuments shall be clearly marked for identification.

c) All stakes and monuments shall be inspected annually and surveyed no less frequently than once in five years by a professional land surveyor, who shall also replace and resurvey any missing or damaged stakes and monuments discovered during an inspection.

d) Control monuments shall be established to check vertical elevations. The control monuments shall be established and maintained by a professional land surveyor.

Section 811.105 Compaction

All wastes shall be deposited at the lowest part of the active face, and compacted to the highest achievable density necessary to minimize void space and settlement unless precluded by extreme weather conditions. The Agency may approve an alternative location for placement of wastes, if the operator demonstrates that it is required under the conditions existing at the site or for reasons of safety.

Section 811.106 Daily Cover

a) A uniform layer of at least 0.15 meter (six inches) of clean soil

material shall be placed on all exposed waste by the end of each day of operation.

b) Alternative materials or procedures, including the removal of daily cover prior to additional waste placement, may be used, provided that the alternative materials or procedures achieve equivalent or superior performance to the requirements of subsection (a) in the following areas:

1) Prevention of blowing debris;

2) Minimization of access to the waste by vectors;

3) Minimization of the threat of fires at the open face; and

4) Minimization of odors.

Section 811.107 Operating Standards

a) Phasing of Operations

1) Waste shall be placed in a manner and at such a rate that mass stability is provided during all phases of operation. Mass stability shall mean that the mass of the waste deposited will not undergo settling or slope failure that interrupts operations at the facility or causes damage to any of the various landfill operations or structures, such as the liner, leachate or drainage collection system, gas collection system or monitoring system.

2) The phasing of operations at the facility shall be designed in such a way as to allow the sequential construction, filling, and closure of discrete units or parts of units.

3) The operator shall design and sequence the waste placement operation in each discrete unit or parts of units, in conjunction with the overall operations of the facility, so as to shorten the operational phase and allow wastes to be built up to the planned final grade.

b) Size and Slope of Working Face

1) The working face of the unit shall be no larger than is necessary, based on the terrain and equipment used in waste placement, to conduct operations in a safe and efficient manner.

2) The slopes of the working face area shall be no steeper than two to one (horizontal to vertical) unless the waste is stable at steeper slopes.

c) Equipment

Equipment shall be maintained and available for use at the facility during all hours of operation, so as to achieve and maintain compliance with the requirements of this Part.

d) Utilities

All utilities, including but not limited to heat, lights, power and communications equipment, necessary for safe operation in compliance

with the requirements of this Part shall be available at the facility at all times.

e) Maintenance

The operator shall maintain and operate all systems and related appurtenances and structures in a manner that facilitates proper operations in compliance with this Part.

f) Open Burning

Open burning is prohibited except in accordance with 35 Ill. Adm. Code 200 through 245.

g) Dust Control

The operator shall implement methods for controlling dust so as to prevent wind dispersal of particulate matter.

h) Noise Control

The facility shall be designed, constructed and maintained to minimize the level of equipment noise audible outside the facility. The facility shall not cause or contribute to a violation of 35 Ill. Adm. Code 900 through 905 or of Section 24 of the Act.

i) Vector Control

The operator shall implement measures to control the population of disease and nuisance vectors.

j) Fire Protection

The operator shall institute fire protection measures including, but not limited to, maintaining a supply of water on-site and radio or telephone access to the nearest fire department.

k) Litter Control

1) The operator shall patrol the facility daily to check for litter accumulation. All litter shall be collected and placed in the fill or in a secure, covered container for later disposal.

2) The facility shall not accept solid waste from vehicles that do not utilize devices such as covers or tarpaulins to control litter, unless the nature of the solid waste load is such that it cannot cause any litter during its transportation to the facility.

l) Mud Tracking

The facility shall implement methods, such as use of wheel washing units, to prevent tracking of mud by hauling vehicles onto public roadways.

m) Liquids Restrictions for MSWLF units

1) Bulk or noncontainerized liquid waste may not be placed in MSWLF units unless:

A) The waste is household waste other than septic waste; or

B) The waste is leachate or gas condensate derived from the MSWLF unit and the MSWLF unit, whether it is a new or existing MSWLF unit or lateral expansion, is designed with a composite liner and leachate collection system that complies with the requirements of Sections 811.306 through 811.309.

2) Containers holding liquid waste may not be placed in a MSWLF unit unless:

A) The container is a small container similar in size to that normally found in household waste;

B) The container is designed to hold liquids for use other than storage; or

C) The waste is household waste.

3) For purposes of this Section:

A) "Liquid waste" means any waste material that is determined to contain "free liquids" as defined by Method 9095 (Paint Filter Liquids Test), as described in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods" (EPA Pub. No. SW-846) incorporated by reference in 35 Ill. Adm. Code 810.104.

B) "Gas condensate" means the liquid generated as a result of gas recovery processes at the MSWLF unit.

BOARD NOTE: Subsection 811.107(m) is derived from 40 CFR 258.28 (1992).

Section 811.108 Salvaging

a) All salvaging operations shall in no way interfere with the operation of the waste disposal facility, result in a violation of any standard in this Part or of 35 Ill. Adm. Code 812 through 815, or delay the construction or interfere in the operation of the liner, leachate collection system, daily, intermediate or final cover and any monitoring devices.

b) All salvaging operations shall be performed in a safe and sanitary manner in compliance with the requirements of this Part.

c) Salvageable materials:

1) May be accumulated on-site by a landfill operator, provided they are managed so as not to create a nuisance, harbor vectors, cause malodors, or create an unsightly appearance; and

2) May not be accumulated on-site for longer than seven days, unless, pursuant to Section 39 of the Act, the Agency has issued a permit with alternative conditions for management of such materials in compliance with subsection (c)(1).

Section 811.109 Boundary Control

a) Access to the open face area of the unit and all other areas within the boundaries of the facility shall be restricted to prevent unauthorized

entry at all times.

b) A permanent sign shall be posted at the entrance to the facility stating that disposal of hazardous waste is prohibited and, if the landfill is approved for accepting special wastes, that special wastes must be permitted by the Agency and accompanied by a manifest and an identification record along with the following information:

1) Permit number, if the facility is subject to the permit requirements of Section 21 of the Act.

2) Hours of operation;

3) The penalty for unauthorized trespassing and dumping;

4) The name and telephone number of the appropriate emergency response agencies who shall be available to deal with emergencies and other problems, if different than the operator; and

5) The name, address and telephone number of the company operating the facility.

Section 811.110 Closure and Written Closure Plan

a) The final slopes and contours shall be designed to complement and blend with the surrounding topography of the proposed final land use of the area.

b) All drainage ways and swales shall be designed to safely pass the runoff from the 100-year, 24-hour precipitation event without scouring or erosion.

c) The final configuration of the facility shall be designed in a manner that minimizes the need for further maintenance.

d) Written closure plan

1) The operator shall maintain a written plan describing all actions that the operator will undertake to close the unit or facility in a manner that fulfills the provisions of the Act, of this Part and of other applicable Parts of 35 Ill. Adm. Code: Chapter I. The written closure plan shall fulfill the minimum information requirements of 35 Ill. Adm. Code 812.114.

2) A modification of the written closure plan shall constitute a significant modification of the permit for the purposes of 35 Ill. Adm. Code 813.Subpart B.

3) In addition to the information requirements of subsection 811.110(d)(1), an owner or operator of a MSWLF unit shall include the following information in the written closure plan:

A) An estimate of the largest area of the MSWLF unit ever requiring a final cover, as required by Section 811.314, at any time during the active life; and

B) An estimate of the maximum inventory of wastes ever on-site over the active life of the landfill facility.

BOARD NOTE: Subsection 811.110(d)(3) is derived from 40 CFR 258.60 (c)(1) and (c)(2) (1992).

e) The owner or operator of a MSWLF unit shall begin closure activities for each MSWLF unit no later than the date determined as follows:

1) 30 days after the date on which the MSWLF unit receives the final receipt of wastes; or

2) If the MSWLF unit has remaining capacity and there is a reasonable likelihood that the MSWLF unit will receive additional wastes, no later than one year after the most recent receipt of wastes.

3) The Agency shall grant extensions beyond this one-year deadline for beginning closure if the owner or operator demonstrates that:

A) the MSWLF unit has the capacity to receive additional wastes; and

B) the owner or operator has taken and will continue to take all steps necessary to prevent threats to human health and the environment from the unclosed MSWLF unit.

BOARD NOTE: Subsection (e) is derived from 40 CFR 258.60(f) (1992).

f) The owner or operator of a MSWLF unit shall complete closure activities for each unit in accordance with the closure plan no later than the dates determined as follows:

1) within 180 days of beginning closure, as specified in subsection (e) of this Section.

2) the Agency shall grant extension of the closure period of the owner or operator demonstrates that:

A) the closure will, of necessity, take longer than 180 days; and

B) the owner or operator has taken and will continue to take all necessary steps to prevent threats to human health and the environment from the unclosed MSWLF unit.

BOARD NOTE: Subsection (e) is derived from 40 CFR 258.60(g)(1992).

g) Deed notation.

1) Following closure of all MSWLF units at a site, the owner or operator shall record a notation on the deed to the landfill facility property or some other instrument that is normally examined during title search. The owner or operator shall place a copy of the instrument in the operating record, and shall notify the Agency that the notation has been recorded and a copy has been placed in the operating record.

2) The notation on the deed or other instrument must be made in such a way that in perpetuity notify any potential purchaser of the property that:

A) The land has been used as a landfill facility; and
B) Its use is restricted pursuant to Section 811.111(d).

BOARD NOTE: Subsection (g) is derived from 40 CFR 258.60(i) (1992).

h) The Agency shall allow the owner or operator of a MSWLF unit to remove the notation from the deed only if the owner or operator demonstrates to the Agency that all wastes are removed from the facility.

BOARD NOTE: Subsection (h) is derived from 40 CFR 258.60(j) (1992).

Section 811.111 Postclosure Maintenance

a) The operator shall treat, remove from the site, or dispose of all wastes and waste residues within 30 days after receipt of the final volume of waste.

b) The operator shall remove all equipment or structures not necessary for the postclosure land use, unless otherwise authorized by permit.

c) Maintenance and Inspection of the Final Cover and Vegetation:

1) Frequency of Inspections

A) The operator shall conduct a quarterly inspection of all vegetated surfaces for a minimum of five years after closure, and after five years, the operator may reduce the frequency of annual inspections until settling has stopped and there are no eroded or scoured areas.

B) For landfills, other than those used exclusively for disposing waste generated at the site, inspections shall be continued for a minimum period of 15 years after closure.

C) For MSWLF units, inspections performed in accordance with subsection (c)(1)(A) shall be continued for a minimum period of 30 years after closure, except as otherwise provided by subsections (c)(1)(D) and (c)(1)(E), below.

D) The Agency may reduce the inspection and maintenance period at a MSWLF unit upon a demonstration by the owner or operator that the reduced period is sufficient to protect human health and environment.

E) The owner or operator of a MSWLF unit shall petition the Board for an adjusted standard in accordance with Section 811.303, if the owner or operator seeks a reduction of the postclosure care monitoring period for all of the following requirements:

i) Inspection and maintenance (Section 811.111);
ii) Leachate collection (Section 811.309);
iii) Gas monitoring (Section 811.310); and
iv) Groundwater monitoring (Section 811.319).

2) All rills, gullies and crevices six inches or deeper identified in the inspection shall be filled. Areas identified by the operator or the Agency inspection as particularly susceptible to erosion shall be recontoured.

3) All eroded and scoured drainage channels shall be repaired and lining material shall be replaced if necessary.

4) All holes and depressions created by settling shall be filled and recontoured so as to prevent standing water.

5) All reworked surfaces, and areas with failed or eroded vegetation in excess of 100 square feet cumulatively, shall be revegetated in accordance with the approved closure plan for the facility.

d) Planned uses of property at MSWLF units

1) The owner or operator of a MSWLF unit shall include a description of the planned uses of the property during the postclosure care period in the written postclosure care plan prepared pursuant to 35 Ill. Adm. Code 812.115.

2) Postclosure use of the property must not disturb the integrity of the final cover, liner, any other components of the containment system, or the function of the monitoring systems, unless necessary to comply with the requirements of this Part.

3) The Agency shall approve any other disturbance if the owner or operator demonstrates that the disturbance of the final cover, liner or other component of the containment system, including any removal of waste, will not increase the potential threat to human health or the environment.

BOARD NOTE: Subsection (d) is derived from 40 CFR 258.61(c)(3) (1992).

Section 811.112 Recordkeeping Requirements for MSWLF Units

The owner or operator of a MSWLF unit shall record and retain near the facility in an operating record or in some alternative location specified by the Agency, the information submitted to the Agency pursuant to 35 Ill. Adm. Code 812 and 813, as it becomes available. At a minimum, the operating record shall contain the following information, even if such information is not required by 35 Ill. Adm. Code 812 or 813:

a) Any location restriction demonstration required by Section 811.302(e) and 35 Ill. Adm. Code 812.109, 812.110, 812.303 and 812.305;

b) Inspection records, training procedures, and notification procedures required by Section 811.323;

c) Gas monitoring results and any remediation plans required by Sections 811.310 and 811.311;

d) Any MSWLF unit design documentation for placement of leachate or gas condensate in a MSWLF unit required by Section 811.107(m);

e) Any demonstration, certification, monitoring results, testing, or analytical data relating to the groundwater monitoring program required by Sections 811.319, 811.324, 811.325, and 811.326 35 Ill. Adm. Code 812.317, 813.501 and 813.502;

f) Closure and post-closure care plans and any monitoring, testing, or analytical data required by Sections 811.110 and 811.111, and 35 Ill. Adm. Code 812.114(h), 812.115 and 812.313; and

g) Any cost estimates and financial assurance documentation required by Subpart G of this Part.

BOARD NOTE: The requirements of this Section are derived from 40 CFR 258.29 (1992).

## SUBPART B: INERT WASTE LANDFILLS

### Section 811.201 Scope and Applicability

The standards of this Subpart, in addition to the requirements of Subpart A, shall apply to all new landfills in which only inert waste is to be placed.

### Section 811.202 Determination of Contaminated Leachate

a) Leachate shall be considered contaminated if it contains concentrations of constituents greater than the public and food processing water supply standards 35 Ill. Adm. Code 302.301, 302.304, and 302.305. The operator shall determine whether the leachate from the waste is contaminated by analyzing it for constituents for which a numerical standard has been established by the Board.

b) A representative sample of leachate extracted from the waste by a laboratory procedure may be used to model the expected constituents and concentrations of the leachate. The laboratory test shall meet the following standards:

    1) The procedure shall be designed to closely reproduce expected field conditions; and

    2) The test shall utilize an extraction fluid representative of the physical and chemical characteristics of the liquid expected to infiltrate through the waste.

c) Actual samples of leachate from an existing solid waste disposal unit or a test fill may be utilized under the following conditions:

    1) The waste in the existing unit is similar to the waste expected to be disposed;

    2) The conditions under which the leachate was formed are similar to those expected to be encountered; and

    3) Leachate is sampled so as to be representative of undiluted and unattenuated leachate emanating from the unit.

### Section 811.203 Design Period

The design period for all inert waste disposal units shall be the estimated operating life of the unit plus a minimum postclosure care period of five years. For landfills, other than those used exclusively for disposing waste generated at the site, the minimum postclosure care period, for the purposes of monitoring settling at the site, shall be 15 years.

### Section 811.204 Final Cover

A minimum of 0.91 meter (three feet) of soil material that will support vegetation which prevents or minimizes erosion shall be applied over all disturbed areas. Where no vegetation is required for the intended postclosure land use, the requirements of Section 811.205(b) will not apply; however, the

final surface shall still be designed to prevent or minimize erosion.

Section 811.205 Final Slope and Stabilization

a) The waste disposal unit shall be designed and constructed to achieve a minimum static slope safety factor of 1.5 and a minimum seismic safety factor of 1.3.

b) Standards for Vegetation

1) Vegetation shall be promoted on all reconstructed surfaces to minimize wind and water erosion;

2) Vegetation shall be compatible with (i.e. grow and survive under) the local climatic conditions;

3) Vegetation shall require little maintenance;

4) Vegetation shall consist of a diverse mix of native and introduced species consistent with the postclosure land use; and

5) Temporary erosion control measures, including, but not limited to, the application, alone or in combination, of mulch, straw, netting, or chemical soil stabilizers, shall be undertaken while vegetation is being established.

c) The landfill site shall be monitored for settling for a minimum period of 15 years after closure as specified in Section 811.203 in order to meet the requirements of this Section.

Section 811.206 Leachate Sampling

a) All inert waste landfills shall be designed to include a monitoring system capable of collecting representative samples of leachate generated by the waste, using methods such as, but not limited to, a pressure-vacuum lysimeter, trench lysimeter or a well point. The sampling locations shall be located so as to collect the least diluted leachate samples.

b) Leachate samples shall be collected and analyzed at least once every six months to determine, using the statistical procedures of Section 811.320(e), whether the collected leachate is contaminated as defined in 35 Ill. Adm. Code 810.103.

c) Once every two years, leachate samples shall be tested for the presence of organic chemicals in accordance with Section 811.319(a)(3). If the results of such testing shows the presence of organic chemicals, the operator shall notify the Agency of this finding, in writing, before the end of the business day following the finding.

d) If the results of testing of leachate samples in accordance with subsection (b) confirm that the leachate is contaminated as defined in 35 Ill. Adm. Code 810.103, the operator shall notify the Agency of this finding, in writing, before the end of the business day following the finding. In addition, the inert waste landfill facility causing the contamination:

1) shall no longer be subject to the inert waste landfill requirements of Subpart B;

2) shall be subject to the requirements for Putrescible and Chemical Waste Landfills of Subpart C, including closure and remedial action.

e) The results of the chemical analysis tests shall be included in the Quarterly Groundwater Reports submitted to the Agency in accordance with 35 Ill. Adm. Code 813.502 for permitted facilities and 35 Ill. Adm. Code 815.Subpart D for non-permitted facilities.

Section 811.207 Load Checking

a) The operator shall not accept wastes for disposal at an inert waste landfill unless it is accompanied by documentation that such wastes are inert based on testing of the leachate from such wastes performed in accordance with the requirements of Section 811.202.

b) The operator shall institute and conduct a random load checking program at each inert waste facility in accordance with the requirements of Section 811.323 except that this program shall also be designed:

1) to detect and discourage attempts to dispose non-inert wastes at the landfill;

2) to require the facility's inspector examine at least one random load of solid waste delivered to the landfill on a random day each week; and

3) to require the operator to test one randomly selected waste sample in accordance with Section 811.202(a) and (b) to determine if the waste is inert.

b) The operator shall include the results of the load checking in the Annual Report submitted to the Agency in accordance with 35 Ill. Adm. Code 813.501 for permitted facilities and 35 Ill. Adm. Code 815.Subpart C for non-permitted facilities.

## SUBPART C: PUTRESCIBLE AND CHEMICAL WASTE LANDFILLS

Section 811.301 Scope and Applicability

In addition to the requirements of Subpart A, the standards of this Subpart apply to all landfills in which chemical and putrescible wastes are to be placed.

Section 811.302 Facility Location

a) No part of a unit shall be located within a setback zone established pursuant to Section 14.2 or 14.3 of the Act;

b) No part of a unit shall be located within the recharge zone or within 366 meters (1200 feet), vertically or horizontally, of a sole-source aquifer designated by the United States Environmental Protection Agency pursuant to Section 1424(e) of the Safe Drinking Water Act (42 U.S.C. 300f et seq.) unless there is a stratum between the bottom of the waste disposal unit and the top of the aquifer that meets the following minimum requirements:

1) The stratum has a minimum thickness of 15.2 meters (50 feet);

2) The maximum hydraulic conductivity in both the horizontal and vertical directions is no greater than $1x10^{-7}$ centimeters per second, as determined by in situ borehole or equivalent tests;

3) There is no indication of continuous sand or silt seams, faults, fractures or cracks within the stratum that may provide paths for migration; and

4) Age dating of extracted water samples from both the aquifer and the stratum indicates that the time of travel for water percolating downward through the relatively impermeable stratum is no faster than 15.2 meters (50 feet) in 100 years.

c) A facility located within 152 meters (500 feet) of the right of way of a township or county road or state or interstate highway shall have its operations screened from view by a barrier of natural objects, fences, barricades, or plants no less than 2.44 meters (8 feet) in height.

d) No part of a unit shall be located closer than 152 meters (500 feet) from an occupied dwelling, school, or hospital that was occupied on the date when the operator first applied for a permit to develop the unit or the facility containing the unit, unless the owner of such dwelling, school, or hospital provides permission to the operator, in writing, for a closer distance.

e) The facility shall not be located closer than 1525 meters (5000 feet) of any runway used by piston type aircraft or within 3050 meters (10,000 feet) of any runway used by turbojet aircraft unless the Federal Aviation Administration provides the operator with written permission, including technical justification, for a closer distance.

f) An owner or operator proposing to locate a new MSWLF unit within a five-mile radius of any airport runway used by turbojet or piston-type aircraft shall notify the affected airport and the Federal Aviation Administration (FAA) within 7 days of filing a permit application with Agency in accordance with 35 Ill. Adm. Code 813 for developing a new landfill.

BOARD NOTE: Subsection (f) is derived from 40 CFR 258.10 (1992).

Section 811.303 Design Period

a) The design period for putrescible and chemical waste disposal units shall be the estimated operating life plus a postclosure care period of 30 years. The design period for putrescible waste landfill units, other than MSWLF units, may be reduced if measures are undertaken in compliance with subsections (b) and (c) to encourage stabilization of putrescible waste. The design period for a MSWLF unit may be reduced in accordance with subsection (d).

b) The design period for a disposal unit which accepts only putrescible waste in shredded form shall be the estimated operating life plus 20 years of postclosure care.

c) The design period for a putrescible waste disposal unit that recycles leachate in accordance with Section 811.309(f) shall be the estimated operating life plus 20 years of postclosure care.

d) An owner or operator of a MSWLF unit may petition the Board for an adjusted standard pursuant to Section 28.1 of the Act and 35 Ill. Adm. Code 106.Subpart G to reduce the minimum postclosure care specified in accordance with the requirements Sections 811.111(c), 811.309(h), 811.310(c), and 811.319(a).

BOARD NOTE: Subsection (d) is derived from 40 CFR 258.61(b)(1).

Section 811.304 Foundation and Mass Stability Analysis

a) The material beneath the unit shall have sufficient strength to support the weight of the unit during all phases of construction and operation. The loads and loading rate shall not cause or contribute to the failure of the liner leachate collection system.

b) The total settlement or swell of the foundation shall not cause or contribute to the failure of the liner leachate collection system.

c) The solid waste disposal unit shall be designed to achieve a safety factor against bearing capacity failure of at least: 2.0 under static conditions and 1.5 under seismic loadings.

d) The waste disposal unit shall be designed to achieve a factor of safety against slope failure of at least: 1.5 for static conditions and 1.3 under seismic conditions.

e) In calculating factors of safety, both long term (in tens or hundreds of years) and short term (over the design period of the facility) conditions expected at the facility shall be considered.

f) The potential for earthquake or blast induced liquefaction, and its effect on the stability and integrity of the unit shall be considered and taken into account in the design. The potential for landslides or earthquake induced liquefaction outside the unit shall be considered if such events could affect the unit.

Section 811.305 Foundation Construction

a) If the in situ material provides insufficient strength to meet the requirements of Section 811.304, then the insufficient material shall be removed and replaced with clean materials sufficient to meet the requirements of Section 811.304.

b) All trees, stumps, roots, boulders and debris shall be removed.

c) All material shall be compacted to achieve the strength and density properties necessary to demonstrate compliance with this Part in conformance with a construction quality assurance plan pursuant to Subpart E.

d) Placement of frozen soil or soil onto frozen ground is prohibited.

e) The foundation shall be constructed and graded to provide a smooth, workable surface on which to construct the liner.

Section 811.306 Liner Systems

a) All units shall be equipped with a leachate drainage and collection

system and a compacted earth liner designed as an integrated system in compliance with the requirements of this Section and of Sections 811.307 and 811.308.

b) The liner and leachate collection system shall be stable during all phases of construction and operation. The side slopes shall achieve a minimum static safety factor of 1.3 and a minimum seismic safety factor of 1.0 at all times.

c) The liner shall be designed to function for the entire design period.

d) Compacted Earth Liner Standards

1) The minimum allowable thickness shall be 1.52 meters (5 feet).

2) The liner shall be compacted to achieve a maximum hydraulic conductivity of $1x10^{-7}$ centimeters per second.

3) The construction and compaction of the liner shall be carried out in accordance with the construction quality assurance procedures of Subpart E so as to reduce void spaces and allow the liner to support the loadings imposed by the waste disposal operation without settling that causes or contributes to the failure of the leachate collection system.

4) The liner shall be constructed from materials whose properties are not affected by contact with the constituents of the leachate expected to be produced.

5) Alternative specifications, using standard construction techniques, for hydraulic conductivity and liner thickness may be utilized under the following conditions:

A) The liner thickness shall be no less than 1.52 meter (5 feet) unless a composite liner consisting of a geomembrane immediately overlying a compacted earth liner is installed. The following minimum standards shall apply for a composite liner:

i) the geomembrane shall be no less than 60 mils in thickness and meet the requirements of subsection (e); and
ii) the compacted earth liner shall be no less than 0.91 meter in thickness (3 feet) and meet the requirements of subsections (d)(2) through (d)(4).

B) The modified liner shall operate in conjunction with a leachate drainage and collection system to achieve equivalent or superior performance to the requirements of this subsection. Equivalent performance shall be evaluated at maximum annual leachate flow conditions.

e) Geomembrane Liners

1) Geomembranes may be used only in conjunction with a compacted earth liner system meeting the requirements of subsection (d) and a leachate drainage and collection system meeting the requirements of Sections 811.307 and 811.308.

2) The geomembrane shall be supported by a compacted base free from

sharp objects. The geomembrane shall be chemically compatible with the supporting soil materials.

3) The geomembrane material shall be compatible with the leachate expected to be generated.

4) Geomembranes shall have sufficient strength and durability to function at the site for the design period under the maximum expected loadings imposed by the waste and equipment and stresses imposed by settlement, temperature, construction and operation.

5) Seams shall be made in the field according to the manufacturer's specifications. All sections shall be arranged so that the use of field seams is minimized and seams are oriented in the direction subject to the least amount of stress.

6) The leachate collection system shall be designed to avoid loss of leachate through openings in the geomembrane.

f) Slurry Trenches and Cutoff Walls Used to Prevent Migration of Leachate

1) Slurry trenches and cutoff walls built to contain leachate migration shall be used only in conjunction with a compacted earth liner and a leachate drainage system meeting the requirements of subsection (d) and Section 811.307 or as part of a remedial action required by Section 811.319.

2) Slurry trenches and cutoff walls shall extend into the bottom confining layer to a depth that will establish and maintain a continuous hydraulic connection and prevent seepage.

3) Exploration borings shall be drilled along the route of the slurry trench or cutoff wall to confirm the depth to the confining layer. In situ tests shall be conducted to determine the hydraulic conductivity of the confining layer.

4) Slurry trenches and cutoff walls shall be stable under all conditions during the design period of the facility. They shall not be susceptible to displacement or erosion under stress or hydraulic gradient.

5) Slurry trenches and cutoff walls shall be constructed in conformance to a construction quality assurance plan, pursuant to Subpart E, that insures that all material and construction methods meet design specifications.

g) The owner or operator may utilize liner configurations other than those specified in this Section, special construction techniques, and admixtures, provided that:

1) The alternative technology or material provides equivalent, or superior, performance to the requirements of this Section;

2) The technology or material has been successfully utilized in at least one application similar to the proposed application; and

3) Methods for manufacturing quality control and construction quality assurance can be implemented.

Section 811.307 Leachate Drainage System

a) The leachate drainage system shall be designed and constructed to operate for the entire design period.

b) The system shall be designed in conjunction with the leachate collection system required by Section 811.308:

1) To maintain a maximum head of leachate 0.30 meter (one foot) above the liner and

2) To operate during the month when the highest average monthly precipitation occurs and if the liner bottom is located within the saturated zone, under the condition that the groundwater table is at its seasonal high level. In addition, the following design assumptions shall apply:

A) The unit is assumed to be at field capacity, and

B) The final cover is in place.

c) A drainage layer shall overlay the entire liner system. This drainage layer shall be no less than 0.30 meter (one foot) thick and shall have a hydraulic conductivity equal to or greater than $1 \times 10^{-3}$ centimeters per second.

d) The drainage layer shall be designed to maintain laminar flow throughout the drainage layer under the conditions described in subsection (b).

e) The drainage layer shall be designed with a graded filter or geotextile as necessary to minimize clogging and prevent intrusion of fine material.

f) Materials used in the leachate collection system shall be chemically resistant to the wastes and the leachate expected to be produced.

Section 811.308 Leachate Collection System

a) The leachate collection system shall be designed and constructed to function for the entire design period.

b) Collection pipes shall be designed for open channel flow to convey leachate under the conditions established in Section 811.307(b).

c) Collection pipes shall be of a cross sectional area that allows cleaning.

d) Materials used in the leachate collection system shall be chemically resistant to the leachate expected to be produced.

e) The collection pipe material and bedding materials as placed shall possess structural strength to support the maximum loads imposed by the overlying materials and equipment used at the facility.

f) Collection pipes shall be constructed within a coarse gravel envelope using a graded filter or geotextile as necessary to minimize clogging.

g) The system shall be equipped with a sufficient number of manholes and cleanout risers to allow cleaning and maintenance of all pipes through-

out the design period.

h) Leachate shall be able to drain freely from the collection pipes. If sumps are used then pumps shall remove the collected leachate before the level of leachate in the sumps rises above the invert of the collection pipes under the conditions established in Section 811.307(b).

Section 811.309 Leachate Treatment and Disposal System

a) Leachate shall be allowed to flow freely from the drainage and collection system. The operator is responsible for the operation of a leachate management system designed to handle all leachate as it drains from the collection system. The leachate management system shall consist of any combination of storage, treatment, pretreatment, and disposal options designed and constructed in compliance with the requirements of this Section.

b) The leachate management system shall consist of any combination of multiple treatment and storage structures, to allow the management and disposal of leachate during routine maintenance and repairs.

c) Standards for On-site Treatment and Pretreatment

1) All on-site treatment or pretreatment systems shall be considered part of the facility.

2) The on-site treatment or pretreatment system shall be designed in accordance with the expected characteristics of the leachate. The design may include modifications to the system necessary to accommodate changing leachate characteristics.

3) The on-site treatment or pretreatment system shall be designed to function for the entire design period.

4) All of the facility's unit operations, tanks, ponds, lagoons and basins shall be designed and constructed with liners or containment structures to control seepage to groundwater.

5) All treated effluent discharged to waters of the State shall meet the requirements of 35 Ill. Adm. Code 309.

6) The treatment system shall be operated by an operator certified under the requirements of 35 Ill. Adm. Code 312.

d) Standards for Leachate Storage Systems

1) The leachate storage facility must be able to store a minimum of at least five days' worth of accumulated leachate at the maximum generation rate used in designing the leachate drainage system in accordance with Section 811.307. The minimum storage capacity may be built up over time and in stages, so long as the capacity for five consecutive days of accumulated leachate, during extreme precipitation conditions, is available at any time during the design period of the facility.

2) All leachate storage tanks shall be equipped with secondary containment systems equivalent to the protection provided by a clay liner 0.61 meter (2 feet thick) having a permeability no greater than $10^{-7}$ centimeters per second.

3) Leachate storage systems shall be fabricated from material compatible with the leachate expected to be generated and resistant to temperature extremes.

4) The leachate storage system shall not cause or contribute to a malodor.

5) The leachate drainage and collection system shall not be used for the purpose of storing leachate.

e) Standards for Discharge to an Off-site Treatment Works

1) Leachate may be discharged to an off-site treatment works that meets the following requirements:

A) All discharges of effluent from the treatment works shall meet the requirements of 35 Ill. Adm. Code 309.

B) The treatment system shall be operated by an operator certified under the requirements of 35 Ill. Adm. Code 312.

C) No more than 50 percent of the average daily influent flow can be attributable to leachate from the solid waste disposal facility. Otherwise, the treatment works shall be considered a part of the solid waste disposal facility.

2) The operator is responsible for securing permission from the off-site treatment works for authority to discharge to the treatment works.

3) All discharges to a treatment works shall meet the requirements of 35 Ill. Adm. Code 310.

4) Pumps, meters, valves and monitoring stations that control and monitor the flow of leachate from the unit and which are under the control of the operator shall be considered part of the facility and shall be accessible to the operator at all times.

5) Leachate shall be allowed to flow into the sewerage system at all times; however, if access to the treatment works is restricted or anticipated to be restricted for longer than five days, then an alternative leachate management system shall be constructed in accordance with subsection (c).

6) Where leachate is not directly discharged into a sewerage system, the operator shall provide storage capacity sufficient to transfer all leachate to an off-site treatment works. The storage system shall meet the requirements of subsection (d).

f) Standards for Leachate Recycling Systems

1) Leachate recycling systems may be utilized only at permitted waste disposal units that meet the following requirements:

A) The unit must have a liner designed, constructed and maintained to meet the minimum standards of Section 811.306.

B) The unit must have a leachate collection system in place and

operating in accordance with Section 811.307.

C) A gas management system, equipped with a mechanical device such as a compressor to withdraw gas, must be implemented to control odors and prevent migration of methane in accordance with Section 811.311.

D) The topography must be such that any accidental leachate runoff can be controlled by ditches, berms or other equivalent control means.

2) Leachate shall not be recycled during precipitation events or in volumes large enough to cause runoff or surface seeps.

3) The amount of leachate added to the unit shall not exceed the ability of the waste and cover soils to transmit leachate flow downward. All other leachate shall be considered excess leachate, and a leachate management system capable of disposing of all excess leachate must be available.

4) The leachate storage and distribution system shall be designed to avoid exposure of leachate to air unless aeration or functionally equivalent devices are utilized.

5) The distribution system shall be designed to allow leachate to be evenly distributed beneath the surface over the recycle area.

6) Daily and intermediate cover shall be permeable to the extent necessary to prevent the accumulation of water and formation of perched watertables and gas buildup; alternatively cover shall be removed prior to additional waste placement.

7) Daily and intermediate cover shall slope away from the perimeter of the site to minimize surface discharges.

g) Leachate Monitoring

1) Representative samples of leachate shall be collected from each unit and tested in accordance with subsections (g)(2) and (g)(3) at a frequency of once per quarter while the leachate management system is in operation. The frequency of testing may be changed to once per year for any monitored constituent, if it is not detected in the leachate. However, if such a constituent is detected in the leachate, testing frequency shall return to a quarterly schedule.

2) Discharges of leachate from units that dispose of putrescible wastes shall be tested for the following constituents prior to treatment or pretreatment:

A) Five day biochemical oxygen demand ($BOD_5$);
B) Chemical oxygen demand;
C) Total Suspended Solids;
D) Total Iron;
E) pH;

F) Any other constituents listed in the operator's National Pollution Discharge Elimination System (NPDES) discharge permit, pursuant to 35 Ill. Adm. Code 304, or required by a publicly owned treatment works, pursuant to 35 Ill. Adm. Code

310; and

G) All of the indicator constituents chosen in accordance with 35 Ill. Adm. Code 811.319(a)(2)(B) and used by the operator for groundwater monitoring.

3) Discharges of leachate from units which dispose only chemical wastes shall be monitored for constituents determined by the characteristics of the chemical waste to be disposed of in the unit. They shall include, as a minimum:

A) pH;

B) Total Dissolved Solids;

C) Any other constituents listed in the operator's NPDES discharge permit, pursuant to 35 Ill. Adm. Code 304, or required by a publicly owned treatment works, pursuant to 35 Ill. Adm. Code 310; and

D) All of the indicator constituents chosen in accordance with 35 Ill. Adm. Code 811.319(a)(2)(B) and used by the operator for groundwater monitoring.

h) Time of Operation of the Leachate Management System

1) The operator shall collect and dispose of leachate for a minimum of five years after closure and thereafter until treatment is no longer necessary.

2) Treatment is no longer necessary if the leachate constituents do not exceed the wastewater effluent standards in 35 Ill. Adm. Code 304.124, 304.125, 304.126 and do not contain a $BOD_5$ concentration greater than 30 mg/L for six consecutive months.

3) Leachate collection at a MSWLF unit shall be continued for a minimum period of 30 years after closure, except as otherwise provided by subsections (h)(4) and (h)(5), below.

4) The Agency may reduce the leachate collection period at a MSWLF unit upon a demonstration by the owner or operator that the reduced period is sufficient to protect human health and environment.

5) The owner or operator of a MSWLF unit shall petition the Board for an adjusted standard in accordance with Section 811.303, if the owner or operator seeks a reduction of the postclosure care monitoring period for all of the following requirements:

i) Inspection and maintenance (Section 811.111);
ii) Leachate collection (Section 811.309);
iii) Gas monitoring (Section 811.310); and
iv) Groundwater monitoring (Section 811.319).

Section 811.310 Landfill Gas Monitoring

a) This Section applies to all units that dispose putrescible wastes.

b) Location and Design of Monitoring Wells

1) Gas monitoring devices shall be placed at intervals and elevations

within the waste to provide a representative sampling of the composition and buildup of gases within the unit.

2) Gas monitoring devices shall be placed around the unit at locations and elevations capable of detecting migrating gas from the ground surface to the lowest elevation of the liner system or the top elevation of the groundwater, whichever is higher.

3) A predictive gas flow model may be utilized to determine the optimum placement of monitoring points required for making observations and tracing the movement of gas.

4) Gas monitoring devices shall be constructed from materials that will not react with or be corroded by the landfill gas.

5) Gas monitoring devices shall be designed and constructed to measure pressure and allow collection of a representative sample of gas.

6) Gas monitoring devices shall be constructed and maintained to minimize gas leakage.

7) The gas monitoring system shall not interfere with the operation of the liner, leachate collection system or delay the construction of the final cover system.

8) At least three ambient air monitoring locations shall be chosen and samples shall be taken no higher than 0.025 meter (1 inch) above the ground and 30.49m (100 feet) downwind from the edge of the unit or at the property boundary, whichever is closer to the unit.

c) Monitoring Frequency

1) All gas monitoring devices, including the ambient air monitors shall be operated to obtain samples on a monthly basis for the entire operating period and for a minimum of five years after closure.

2) After a minimum of five years after closure, monitoring frequency may be reduced to quarterly sampling intervals.

3) The sampling frequency may be reduced to yearly sampling intervals upon the installation and operation of a gas collection system equipped with a mechanical device such as a compressor to withdraw gas.

4) Monitoring shall be continued for a minimum period of: thirty years after closure at MSWLF units, except as otherwise provided by subsections (c)(5) and (c)(6), below; five years after closure at landfills, other than MSWLF units, which are used exclusively for disposing of wastes generated at the site; or fifteen years after closure at all other landfills regulated under this Part. Monitoring, beyond the minimum period, may be discontinued if the following conditions have been met for at least one year:

A) The concentration of methane is less than five percent of the lower explosive limit in air for four consecutive quarters at all monitoring points outside the unit; and

B) Monitoring points within the unit indicate that methane is no

longer being produced in quantities that would result in migration from the unit and exceed the standards of subsection (a)(1).

5) The Agency may reduce the gas monitoring period at a MSWLF unit upon a demonstration by the owner or operator that the reduced period is sufficient to protect human health and environment.

6) The owner or operator of a MSWLF unit shall petition the Board for an adjusted standard in accordance with Section 811.303, if the owner or operator seeks a reduction of the postclosure care monitoring period for all of the following requirements:

i) Inspection and maintenance (Section 811.111);
ii) Leachate collection (Section 811.309);
iii) Gas monitoring (Section 811.310); and
iv) Groundwater monitoring (Section 811.319).

d) Parameters to be Monitored

1) All below ground monitoring devices shall be monitored for the following parameters at each sampling interval:

A) Methane;
B) Pressure;
C) Nitrogen;
D) Oxygen; and
E) Carbon dioxide.

2) Ambient air monitors shall be sampled for methane only when the average wind velocity is less than 8 kilometers (five miles) per hour at a minimum of three downwind locations 30.49 meters (100 feet) from the edge of the unit or the property boundary, whichever is closer to the unit.

3) All buildings within a facility shall be monitored for methane by utilizing continuous detection devices located at likely points where methane might enter the building.

Section 811.311 Landfill Gas Management System

a) The operator shall install a gas management system if any one of the following conditions are met:

1) A methane concentration greater than 50 percent of the lower explosive limit in air is detected below the ground surface by a monitoring device or is detected by an ambient air monitor located at or beyond the property boundary or 30.5 meters (100 feet) from the edge of the unit, whichever is less, unless the operator can demonstrate that the detected methane concentration is not attributable to the facility;

2) Methane is detected at a concentration greater than 25 percent of the lower explosive limit in air in any building on or near the facility, unless the operator can demonstrate that the detected methane concentration is not attributable to the facility;

3) Malodors caused by the unit are detected beyond the property boundary; or

4) Leachate is recycled in accordance with Section 811.309(e).

b) If methane gas levels exceed the limits specified in subsections (a)(1) or (a)(2), an owner or operator of a MSWLF unit shall:

1) Notify the Agency in writing, within two business days, of an observed exceedance; and
2) Implement the requirements of this Section to ensure the protection of human health.

c) Standards for Gas Venting System

1) Gas venting systems shall be utilized only as optional, temporary mitigation until the completion of an active system.

2) All materials shall be resistant to chemical reaction with the constituents of the gas.

3) The system shall be capable of venting all gas down to the water table or bottom of the liner, whichever is higher.

4) Gas venting systems shall be installed only outside the perimeter of the unit.

d) Standards for Gas Collection Systems

1) Gas collection systems may be installed either within the perimeter of the unit or outside the unit.

2) The operator shall design and operate the system so that the standards of subsections (a)(1), (a)(2), and (a)(3) will not be exceeded.

3) The gas collection system shall transport gas to a central point or points for processing for beneficial uses or disposal in accordance with the requirements of Section 811.312.

4) The gas collection system shall be designed to function for the entire design period. The design may include changes in the system to accommodate changing gas flow rates or compositions.

5) All materials and equipment used in construction of the system shall be rated by the manufacturer as safe for use in hazardous or explosive environments and shall be resistant to corrosion by constituents of the landfill gas.

6) The gas collection system shall be designed and constructed to withstand all landfill operating conditions, including settlement.

7) The gas collection system and all associated equipment including compressors, flares, monitoring installations, and manholes shall be considered part of the facility.

8) Provisions shall be made for collecting and draining gas condensate to a management system meeting the requirements of Section 811.309.

9) Under no circumstances shall the gas collection system compromise the integrity of the liner, leachate collection or cover systems.

10) The portion of the gas collection system, used to convey the gas collected from one or more units for processing and disposal shall be tested to be airtight to prevent the leaking of gas from the collection system or entry of air into the system.

11) The gas collection system shall be operated until the waste has stabilized enough to no longer produce methane in quantities that exceed the minimum allowable concentrations in subsections (a)(1), (a)(2), and (a)(3).

12) The gas collection system shall be equipped with a mechanical device, such as a compressor, capable of withdrawing gas, or be designed so that a mechanical device can be easily installed at a later time, if necessary, to meet the requirements of subsections (a)(1), (a)(2), and (a)(3).

BOARD NOTE: Subsection (b) is derived from 40 CFR 258.23(c)(1) (1992).

Section 811.312 Landfill Gas Processing and Disposal System

a) The processing of landfill gas for use is strongly encouraged but is not required.

b) Except as allowed in subsection (g), the landfill gas processing and disposal system, including compressors, blowers, raw gas monitoring systems, devices used to control the flow of gas from the unit, flares, gas treatment devices, air pollution control devices and monitoring equipment must remain under the control of the operator and shall be considered part of the waste disposal facility.

c) No gas may be discharged directly to the atmosphere unless treated or burned on-site prior to discharge in accordance with a permit issued by the Agency pursuant to 35 Ill. Adm. Code 200 through 245.

d) Representative flow rate measurements shall be made of gas flow into treatment or combustion devices.

e) When used for the on-site combustion of landfill gas, flares shall meet the general control device requirements of new source performance standards adopted pursuant to Section 9.1(b) of the Act.

f) Standards for On-site Combustion of Landfill Gas Using Devices Other Than Flares

1) At a minimum, landfill gas shall be measured for flow rate, heat value, and moisture content along with combustion parameters including, but not limited to, oxygen and carbon dioxide prior to treatment or combustion. Constituents of the landfill gas and combustion byproducts shall be identified for inclusion in an Agency issued permit based on the type of waste streams that are or will be in the landfill, landfill gas analysis and potential for being emitted into the air after treatment or combustion.

2) All constituents and parameters that must be measured before and after treatment or combustion shall be identified and included in a permit issued by the Agency pursuant to 35 Ill. Adm. Code 200 through 245. At a minimum, the following types of constituents must be considered for inclusion in the permit:

A) The six criteria air pollutants and the hazardous air pollutants subject to regulation under the Clean Air Act (42 U.S.C. 7401 et seq.);

B) Any list of toxic air contaminants, including carcinogens, mutagens and listed hazardous air pollutants adopted by the Board pursuant to Section 9.5 of the Act;

C) Volatile Organic Compounds;

D) Constituents present in the landfill gas; and

E) Combustion byproducts expected to be emitted from the combustion or treatment device.

g) Landfill gas may be transported off-site to a gas processing facility in accordance with the following requirements:

1) The solid waste disposal facility contributes less than 50 percent of the total volume of gas accepted by the gas processing facility. Otherwise, the processing facility must be considered a part of the solid waste management facility.

2) The landfill gas shall be monitored for the parameters listed in subsection (d)(1) as well as other constituents such as, ammonia ($NH_3$), hydrogen sulfide($H_2S$) and hydrogen($H_2$) that are needed to operate the gas processing facility.

3) The gas processing facility is be sized to handle the expected volume of gas.

4) The transportation of gas to an off-site gas processing facility shall in no way relieve the operator of the requirements of Section 811.311(a).

Section 811.313 Intermediate Cover

a) All waste which is not to be covered within 60 days of placement by another lift of waste or final cover in accordance with Section 811.314 shall have a cover equivalent to that provided by 0.30 meter (1 foot) of compacted clean soil material.

b) All areas with intermediate cover shall be graded so as to facilitate drainage of runoff and minimize infiltration and standing water.

c) The grade and thickness of intermediate cover shall be maintained until the placement of additional wastes or the final cover. All cracks, rills, gullies and depressions shall be repaired to prevent access to the solid waste by vectors, to minimize infiltration and to prevent standing water.

Section 811.314 Final Cover System

a) The unit shall be covered by a final cover consisting of a low permeability layer overlain by a final protective layer constructed in accordance with the requirements of this Section.

b) Standards for the Low Permeability Layer

1) Not later than 60 days after placement of the final lift of solid waste, a low permeability layer shall be constructed.

2) The low permeability layer shall cover the entire unit and connect with the liner system.

3) The low permeability layer shall consist of any one of the following:

A) A compacted earth layer constructed in accordance with the following standards:

i) The minimum allowable thickness shall be 0.91 meter (3 feet);
ii) The layer shall be compacted to achieve a permeability of $1x10^{-}7$ centimeters per second and minimize void spaces.
iii) Alternative specifications may be utilized provided that the performance of the low permeability layer is equal to or superior to the performance of a layer meeting the requirements of subsections (b)(3)(A)(i) and (b)(3)(A)(ii).

B) A geomembrane constructed in accordance with the following standards:

i) The geomembrane shall provide performance equal or superior to the compacted earth layer described in subsection (b)(3)(A).
ii) The geomembrane shall have strength to withstand the normal stresses imposed by the waste stabilization process.
iii) The geomembrane shall be placed over a prepared base free from sharp objects and other materials which may cause damage.

C) Any other low permeability layer construction techniques or materials, provided that they provide equivalent or superior performance to the requirements of this subsection.

4) For a MSWLF unit, subsection (b)(3) notwithstanding, if the bottom liner system permeability is lower than $1 \times 10^{-7}$ cm/sec, the permeability of the low permeability layer of the final cover system shall be less than or equal to the permeability of the bottom liner system.

c) Standards for the Final Protective Layer

1) The final protective layer shall cover the entire low permeability layer.

2) The thickness of the final protective layer shall be sufficient to protect the low permeability layer from freezing and minimize root penetration of the low permeability layer, but shall not be less than 0.91 meter (3 feet).

3) The final protective layer shall consist of soil material capable of supporting vegetation.

4) The final protective layer shall be placed as soon as possible after placement of the low permeability layer to prevent desiccation, cracking, freezing or other damage to the low permeability layer.

BOARD NOTE: Subsection (b)(4) is derived from 40 CFR 258.60(a) (1992).

Section 811.315 Hydrogeologic Site Investigations

a) Purpose

The operator shall conduct a hydrogeologic investigation to develop hydrogeologic information for the following uses:

1) Provide information to perform a groundwater impact assessment; and

2) Provide information to establish a groundwater monitoring system.

b) General Requirements

1) The investigation shall be conducted in a minimum of three phases prior to submission of any application to the Agency for a permit to develop and operate a landfill facility.

2) The study area shall consist of the entire area occupied by the facility and any adjacent areas, if necessary for the purposes of the hydrogeological investigation set forth in subsection (a).

3) All borings shall be sampled continuously at all recognizable points of geologic variation, except that where continuous sampling is impossible or where non-continuous sampling can provide equivalent information, samples shall be obtained at intervals no greater than 1.52 meters (five feet) in homogeneous strata.

c) Minimum Requirements for a Phase I Investigation

1) The operator shall conduct a Phase I Investigation to develop the following information:

A) Climatic aspects of the study area;

B) The regional and study area geologic setting, including a description of the geomorphology and stratigraphy of the area;

C) The regional groundwater regime including water table depths and aquifer characteristics; and

D) Information for the purpose of designing a Phase II Hydrogeologic Investigation.

2) Specific Requirements

A) The regional hydrogeologic setting of the unit shall be established by using material available from all possible sources, including, but not limited to, the Illinois Scientific Surveys, the Agency, other State and Federal organizations, water well drilling logs, and previous investigations.

B) A minimum of one continuously sampled boring shall be drilled

on the site, as close as feasible to the geographic center, to determine if the available regional hydrogeologic setting information is accurate and to characterize the site-specific hydrogeology to the extent specified by this phase of the investigation. The boring shall extend at least 15.2 meters (50 feet) below the bottom of the uppermost aquifer or through the full depth of the confining layer below the uppermost aquifer, or to bedrock, if the bedrock is below the upper most aquifer, whichever elevation is higher. The locations of any additional borings, required under this subsection, may be chosen by the investigator, but shall be sampled continuously.

d) Minimum Requirements for a Phase II Investigation

1) Information to be developed

Using the information developed in the Phase I survey, a Phase II study shall be conducted to collect the site-specific information listed below as needed to augment data collected during the Phase I investigation and to prepare for the Phase III investigation:

A) Structural characteristics and distribution of underlying strata including bedrock;

B) Chemical and physical properties including, but not limited to, lithology, mineralogy, and hydraulic characteristics of underlying strata including those below the uppermost aquifer;

C) Soil characteristics, including soil types, distribution, geochemical and geophysical characteristics;

D) The hydraulic conductivities of the uppermost aquifer and all strata above it;

E) The vertical extent of the uppermost aquifer;

F) The direction and rate of groundwater flow.

2) Specific Requirements

A) One boring shall be located as close as feasible to the topographical high point, and another shall be located as close as feasible to the topographical low point of the study area.

B) At least one boring shall be at or near each corner of the site. Where the property is irregularly shaped the borings shall be located near the boundary in a pattern and spacing necessary to obtain data over the entire study area.

C) Additional borings may be located at intermediate points at locations and spacings necessary to establish the continuity of the stratigraphic units.

D) Piezometers and groundwater monitoring wells shall be established to determine the direction and flow characteristics of the groundwater in all strata and extending down to the bottom of the uppermost aquifer. Groundwater samples taken from such monitoring wells shall be used to

develop preliminary information needed for establishing background concentrations in accordance with subsection (e)(1)(G).

E) Other methods may be utilized to confirm or accumulate additional information. Such methods may be used only as a supplement to, not in lieu of, site-specific boring information. Other methods include, but are not limited to, geophysical well logs, geophysical surveys, aerial photography, age dating, and test pits.

e) Minimum Standards for a Phase III Investigation

1) Using the information developed during the Phase I and Phase II Investigations, the operator shall conduct a Phase III Investigation. This investigation shall be conducted to collect or augment the site-specific information needed to carry out the following:

A) Verification and reconciliation of the information collected in the Phase I and II investigations;

B) Characterization of potential pathways for contaminant migration;

C) Correlation of stratigraphic units between borings;

D) Continuity of petrographic features including, but not limited to, sorting, grain size distribution, cementation and hydraulic conductivity;

E) Identification of zones of potentially high hydraulic conductivity;

F) Identification of the confining layer, if present;

G) Concentrations of chemical constituents present in the groundwater below the unit, down to the bottom of the uppermost aquifer, using a broad range of chemical analysis and detection procedures such as, gas chromatographic and mass spectrometric scanning. However, additional measurements and procedures shall be carried out to establish background concentrations, in accordance with Section 811.320(d), for:

i) Any constituent for which there is a public or food processing water supply standard at 35 Ill. Adm. Code 302 established by the Board and which is expected to appear in the leachate; and

ii) Any other constituent for which there is no Board-established standard, but which is expected to appear in the leachate at concentrations above PQL, as defined in Section 811.319(a)(4) for that constituent;

H) Characterization of the seasonal and temporal, naturally and artificially induced, variations in groundwater quality and groundwater flow; and

I) Identification of unusual or unpredicted geologic features, including: fault zones, fracture traces, facies changes,

solution channels, buried stream deposits, cross cutting structures and other geologic features that may affect the ability of the operator to monitor the groundwater or predict the impact of the disposal facility on groundwater.

2) In addition to the specific requirements applicable to phase I and II investigations, the operator shall collect information needed to meet the minimum standards of a phase III investigation by using methods that may include, but not limited to excavation of test pits, additional borings located at intermediate points between boreholes placed during phase I and II investigations, placement of piezometers and monitoring wells, and institution of procedures for sampling and analysis.

f) The operator may conduct the hydrogeologic investigation in any number of alternative ways provided that the necessary information is collected in a systematic sequence consisting of at least three phases that is equal to or superior to the investigation procedures of this Section.

Section 811.316 Plugging and Sealing of Drill Holes

All drill holes, including exploration borings that are not converted into monitoring wells, monitoring wells that are no longer necessary to the operation of the site, and other holes that may cause or facilitate contamination of groundwater shall be sealed in accordance with the following standards:

a) If not sealed or plugged immediately, the drill hole shall be covered to prevent injury to people or animals.

b) All drill holes no longer intended for use shall be back-filled with materials that are compatible with the geochemistry of the site and with the leachate in sufficient quantities and in such a way as to prevent the creation of a pathway for contaminants to migrate.

c) For drill holes in gravels and other permeable strata where a watertight seal is not necessary to prevent the creation of a pathway, drill cuttings and other earthen materials may be utilized as backfill.

d) All excess drilling mud, oil, drill cuttings, and any other contaminated materials uncovered during or created by drilling shall be disposed of in accordance with the requirements of 35 Ill. Adm. Code 700 through 749, 807 and 809 through 815.

e) The operator shall restore the area around the drill hole to its original condition.

Section 811.317 Groundwater Impact Assessment

The impacts of the seepage of leachate from the unit shall be assessed in a systematic fashion using the techniques described in this Section.

a) Procedures for Performing the Groundwater Impact Assessment

1) The operator shall estimate the amount of seepage from the unit during operations which assume:

A) That the minimum design standards for slope configuration, cover, liner, leachate drainage and collection system apply;

and

B) That the actual design standards planned for the unit apply. Other designs for the unit may be used if determined by the operator to be appropriate to demonstrate the impacts to groundwater, pursuant to subsection (b).

2) The concentration of constituents in the leachate shall be determined from actual leachate samples from the waste or similar waste, or laboratory derived extracts.

3) A contaminant transport model meeting the standards of subsection (c) shall be utilized to estimate the concentrations of the leachate constituents over time and space. The Agency must review a groundwater contaminant transport model for acceptance in accordance with 35 Ill. Adm Code 813.111.

b) Acceptable Groundwater Impact Assessment

The groundwater contaminant transport (GCT) model results shall be used in the assessment of the groundwater impact. The groundwater impact shall be considered acceptable if the GCT model predicts that the concentrations of all the constituents of the leachate outside the zone of attenuation are less than the applicable groundwater quality standards of Section 811.320, within 100 years of closure of the unit.

c) Standards for the Contaminant Transport Model

1) The model shall have supporting documentation that establishes its ability to represent groundwater flow and contaminant transport and any history of its previous applications.

2) The set of equations representing groundwater movement and contaminant transport must be theoretically sound and well documented.

3) The numerical solution methods must be based upon sound mathematical principles and be supported by verification and checking techniques.

4) The model must be calibrated against site specific field data developed pursuant to this Part.

5) A sensitivity analysis shall be conducted to measure the model's response to changes in the values assigned to major parameters, specified error tolerances, and numerically assigned space and time discretizations.

6) Mass balance calculations on selected elements in the model shall be performed to verify physical validity. Where the model does not prescribe the amount of mass entering the system as a boundary condition, this step may be ignored.

7) The values of the model's parameters requiring site specific data shall be based upon actual field or laboratory measurements.

8) The values of the model's parameters which do not require site specific data shall be supported by laboratory test results or equivalent methods documenting the validity of the chosen

parametric values.

Section 811.318 Design, Construction and Operation of Groundwater Monitoring Systems

a) All potential sources of discharges to groundwater within the facility, including, but not limited to, all waste disposal units and the leachate management system, shall be identified and studied through a network of monitoring wells operated during the active life of the unit and for the time after closure specified in accordance with Section 811.319. Monitoring wells designed and constructed as part of the monitoring network shall be maintained along with records that include, but are not limited to, exact well location, well size, type of well, the design and construction practice used in its installation and well and screen depths.

b) Standards for the Location of Monitoring Points

1) A network of monitoring points shall be established at sufficient locations downgradient with respect to groundwater flow and not excluding the downward direction, to detect any discharge of contaminants from any part of a potential source of discharge.

2) Monitoring wells shall be located in stratigraphic horizons that could serve as contaminant migration pathways.

3) Monitoring wells shall be established as close to the potential source of discharge as possible without interfering with the waste disposal operations, and within half the distance from the edge of the potential source of discharge to the edge of the zone of attenuation downgradient, with respect to groundwater flow, from the source.

4) The network of monitoring points of several potential sources of discharge within a single facility may be combined into a single monitoring network, provided that discharges from any part of all potential sources can be detected.

5) A minimum of at least one monitoring well shall be established at the edge of the zone of attenuation and shall be located downgradient with respect to groundwater flow and not excluding the downward direction, from the unit. Such well or wells shall be used to monitor any statistically significant increase in the concentration of any constituent, in accordance with Section 811.320(e) and shall be used for determining compliance with an applicable groundwater quality standard of Section 811.320. An observed statistically significant increase above the applicable groundwater quality standards of Section 811.320 in a well located at or beyond the compliance boundary shall constitute a violation.

c) Maximum Allowable Predicted Concentrations

The operator shall use the same calculation methods, data, and assumptions as used in the groundwater impact assessment to predict the concentration over time and space of all constituents chosen to be monitored in accordance with Section 811.319 at all monitoring points. The predicted values shall be used to establish the maximum allowable predicted concentrations (MAPC) at each monitoring point. The MAPCs calculated in this subsection shall be applicable within the zone of

attenuation.

d) Standards for Monitoring Well Design and Construction

1) All monitoring wells shall be cased in a manner that maintains the integrity of the bore hole. The casing material shall be inert so as not to affect the water sample. Casing requiring solvent-cement type couplings shall not be used.

2) Wells shall be screened to allow sampling only at the desired interval. Annular space between the borehole wall and well screen section shall be packed with gravel sized to avoid clogging by the material in the zone being monitored. The slot size of the screen shall be designed to minimize clogging. Screens shall be fabricated from material expected to be inert with respect to the constituents of the groundwater to be sampled.

3) Annular space above the well screen section shall be sealed with a relatively impermeable, expandable material such as a cement/bentonite grout, which does not react with or in any way affect the sample, in order to prevent contamination of samples and groundwater and avoid interconnections. The seal shall extend to the highest known seasonal groundwater level.

4) The annular space shall be back-filled with expanding cement grout from an elevation below the frost line and mounded above the surface and sloped away from the casing so as to divert surface water away.

5) The annular space between the upper and lower seals and in the unsaturated zone may be back-filled with uncontaminated cuttings.

6) All wells shall be covered with vented caps and equipped with devices to protect against tampering and damage.

7) All wells shall be developed to allow free entry of water, minimize turbidity of the sample, and minimize clogging.

8) The transmissivity of the zone surrounding all well screens shall be established by field testing techniques.

9) Other sampling methods and well construction techniques may be utilized if they provide equal or superior performance to the requirements of this subsection.

e) Standards for Sample Collection and Analysis

1) The groundwater monitoring program shall include consistent sampling and analysis procedures to assure that monitoring results can be relied upon to provide data representative of groundwater quality in the zone being monitored.

2) The operator shall utilize procedures and techniques to insure that collected samples are representative of the zone being monitored and that prevent cross contamination of samples from other monitoring wells or from other samples. At least 95 percent of a collected sample shall consist of groundwater from the zone being monitored.

3) The operator shall establish a quality assurance program that provides quantitative detection limits and the degree of error for analysis of each chemical constituent.

4) The operator shall establish a sample preservation and shipment procedure that maintains the reliability of the sample collected for analysis.

5) The operator shall institute a chain of custody procedure to prevent tampering and contamination of the collected samples prior to completion of analysis.

6) At a minimum, the operator shall sample the following parameters at all wells at the time of sample collection and immediately before filtering and preserving samples for shipment:

A) The elevation of the water table;
B) The depth of the well below ground;
C) pH;
D) The temperature of the sample; and
E) Specific Conductance.

7) In addition to the requirements of subsections (e)(1) through (e)(6), the following requirements shall apply to MSWLF units:

A) Each time groundwater is sampled, an owner or operator of a MSWLF unit shall:

i) Measure the groundwater elevations in each well immediately prior to purging; and

ii) Determine the rate and direction of groundwater flow.

B) An owner or operator shall measure groundwater elevations in wells which monitor the same waste management area within a period of time short enough to avoid temporal variations in groundwater flow which could preclude accurate determination of groundwater flow rate and direction.

BOARD NOTE: Subsection (e)(7) is derived from 40 CFR 258.53(d) (1992).

Section 811.319 Groundwater Monitoring Programs

a) Detection Monitoring Program

Any use of the term "maximum allowable predicted concentration" in this Section is a reference to 35 Ill. Adm. Code 811.318(c). The operator shall implement a detection monitoring program in accordance with the following requirements:

1) Monitoring Schedule and Frequency

A) The monitoring period shall begin as soon as waste is placed into the unit of a new landfill or within one year of the effective date of this Part for an existing landfill. Monitoring shall continue for a minimum period of fifteen years after closure, or in the case of MSWLF units, a minimum period of 30 years after closure, except as otherwise provided by subsection (a)(1)(C) of this Section. The operator shall

sample all monitoring points for all potential sources of contamination on a quarterly basis except as specified in subsection (a)(3) or may institute more frequent sampling throughout the time the source constitutes a threat to groundwater. For the purposes of this section, the source shall be considered a threat to groundwater, if the results of the monitoring indicate that the concentrations of any of the constituent monitored within the zone of attenuation are above the maximum allowable predicted concentration for that constituent.

B) Beginning fifteen years after closure of the unit, or five years after all other potential sources of discharge no longer constitute a threat to groundwater, as defined in subsection (a)(1)(A), the monitoring frequency may change on a well by well basis to an annual schedule if either of the following conditions exist. However, monitoring shall return to a quarterly schedule at any well where a statistically significant increase is determined to have occurred in accordance with Section 811.320(e), in the concentration of any constituent with respect to the previous sample.

i) All constituents monitored within the zone of attenuation have returned to a concentration less than or equal to ten percent of the maximum allowable predicted concentration; or

ii) All constituents monitored within the zone of attenuation are less than or equal to their maximum allowable predicted concentration for eight consecutive quarters.

C) Monitoring shall be continued for a minimum period of: thirty years after closure at MSWLF units, except as otherwise provided by subsections (a)(1)(D) and (a)(1)(E), below; five years after closure at landfills, other than MSWLF units, which are used exclusively for disposing waste generated at the site; or fifteen years after closure at all other landfills regulated under this Part. Monitoring, beyond the minimum period, may be discontinued under the following conditions:

i) No statistically significant increase is detected in the concentration of any constituent above that measured and recorded during the immediately preceding scheduled sampling for three consecutive years, after changing to an annual monitoring frequency; or

ii) Immediately after contaminated leachate is no longer generated by the unit.

D) The Agency may reduce the groundwater monitoring period at a MSWLF unit upon a demonstration by the owner or operator that the reduced period is sufficient to protect human health and environment.

E) An owner or operator of a MSWLF unit shall petition the Board for an adjusted standard in accordance with Section 811.303, if the owner or operator seeks a reduction of the postclosure care monitoring period for all of the following requirements:

i) Inspection and maintenance (Section 811.111);
ii) Leachate collection (Section 811.309);
iii) Gas monitoring (Section 811.310); and
iv) Groundwater monitoring (Section 811.319).

BOARD NOTE: Changes to subsections (a)(1)(A) and (a)(1)(C), and subsections (a)(1)(D) and (a)(1)(E) are derived from 40 CFR 258.61 (1992).

2) Criteria for Choosing Constituents to be Monitored

A) The operator shall monitor each well for constituents that will provide a means for detecting groundwater contamination. Constituents shall be chosen for monitoring if they meet the following requirements:

i) The constituent appears in, or is expected to be in, the leachate; and
ii) The Board has established for the constituent a public or food processing water supply standard, at 35 Ill. Adm. Code 302, the Board has established a groundwater quality standard under the Illinois Groundwater Protection Act (Ill. Rev. Stat. 1989, ch. 111 1/2, par. 7451 et seq.),

or the constituent may otherwise cause or contribute to groundwater contamination.

B) One or more indicator constituents, representative of the transport processes of constituents in the leachate, may be chosen for monitoring in place of the constituents it represents. The use of such indicator constituents must be included in an Agency approved permit.

3) Organic Chemicals Monitoring

The operator shall monitor each existing well that is being used as a part of the monitoring well network at the facility within one year of the effective date of this Part, and monitor each new well within three months of its establishment. The monitoring required by this subsection shall be for a broad range of organic chemical contaminants in accordance with the procedures described below:

A) The analysis shall be at least as comprehensive and sensitive as the tests for;

i) The 51 organic chemicals in drinking water described at 40 CFR 141.40 (1988), incorporated by reference at 35 Ill. Adm. Code 810.104; and
ii) Any other organic chemical for which a groundwater quality standard or criterion has been adopted pursuant to Section 14.4 of the Act or Section 8 of the Illinois Groundwater Protection Act.

B) At least once every two years, the operator shall monitor each well in accordance with subsection (a)(1)(A).

C) The operator of a MSWLF unit shall monitor each well in accordance with subsection (a)(1)(A) on an annual basis.

BOARD NOTE: Subsection (a)(3)(C) is derived from 40 CFR 258.54(b)(1992).

4) Confirmation of Monitored Increase

A) The confirmation procedures of this subsection shall be used only if the concentrations of the constituents monitored can be measured at or above the practical quantitation limit (PQL). The PQL is defined as the lowest concentration that can be reliably measured within specified limits of precision and accuracy, under routine laboratory operating conditions. The operator shall institute the confirmation procedures of subsection (a)(4)(B) after notifying the Agency in writing, within 10 days, of the following observed increases:

i) The concentration of any constituent monitored in accordance with subsection (a)(1) and (a)(2) shows a progressive increase over four consecutive quarters;
ii) The concentration of any constituent exceeds the maximum allowable predicted concentration at an established monitoring point within the zone of attenuation;
iii) The concentration of any constituent monitored in accordance with subsection (a)(3) exceeds the preceding measured concentration at any established monitoring point; and
iv) The concentration of any constituent monitored at or beyond the zone of attenuation exceeds the applicable groundwater quality standards of Section 811.320.

B) The confirmation procedures shall include the following:

i) The operator shall verify any observed increase by taking additional samples within 45 days of the initial observation and ensure that the samples and sampling protocol used will detect any statistically significant increase in the concentration of the suspect constituent in accordance with subsection 811.320(e), so as to confirm the observed increase. The operator shall notify the Agency of any confirmed increase before the end of the next business day following the confirmation.
ii) The operator shall determine the source of any confirmed increase, which may include, but shall not be limited to, natural phenomena, sampling or analysis errors, or an off-site source.
iii) The operator shall notify the Agency in writing of any confirmed increase and state the source of the confirmed increase and provide the rationale used in such a determination within ten days of the determination.

b) Assessment Monitoring

The operator shall begin an assessment monitoring program in order to confirm that the solid waste disposal facility is the source of the contamination and to provide information needed to carry out a groundwater impact assessment in accordance with subsection (c). The assessment monitoring program shall be conducted in accordance with the following requirements:

1) The assessment monitoring shall be conducted in accordance with this subsection to collect information to assess the nature and extent of groundwater contamination. The owner or operator of a

MSWLF unit shall comply with the additional requirements prescribed in subsection (b)(5). The assessment monitoring shall consist of, but not be limited to, the following steps:

A) More frequent sampling of the wells in which the observation occurred;

B) More frequent sampling of any surrounding wells;

C) The placement of additional monitoring wells to determine the source and extent of the contamination;

D) Monitoring of additional constituents that might indicate the source and extent of contamination; and

E) Any other investigative techniques that will assist in determining the nature and extent of the contamination.

2) The operator of the facility for which assessment monitoring is required shall file the plans for an assessment monitoring program with the Agency. If the facility is permitted by the Agency, then the plans shall be filed for review as a significant permit modification pursuant to 35 Ill. Adm. Code 813.Subpart B. The assessment monitoring program shall be implemented within 90 days of confirmation of any monitored increase in accordance with subsection (a)(4) or, in the case of permitted facilities, within 90 days of Agency approval.

3) If the analysis of the assessment monitoring data shows that the concentration of one or more constituents, monitored at or beyond the zone of attenuation is above the applicable groundwater quality standards of Section 811.320 and is attributable to the solid waste disposal facility, then the operator shall determine the nature and extent of the groundwater contamination including an assessment of the potential impact on the groundwater should waste continue to be accepted at the facility and shall implement remedial action in accordance with subsection (d).

4) If the analysis of the assessment monitoring data shows that the concentration of one or more constituents is attributable to the solid waste disposal facility and exceeds the maximum allowable predicted concentration within the zone of attenuation, then the operator shall conduct a groundwater impact assessment in accordance with the requirements of subsection (c).

5) In addition to the requirements of subsection (b)(1), to collect information to assess the nature and extent of groundwater contamination, the following requirements are applicable to MSWLF units:

A) The monitoring of additional constituents pursuant to (b)(1)(D) shall include, at a minimum, the constituents listed in 40 CFR 258, Appendix II, incorporated by reference at 35 Ill. Adm. Code 810.104.

BOARD NOTE: Subsection (b)(5)(A) is derived from 40 CFR 258.55(b) (1992).

B) Within 14 days of obtaining the results of sampling required under subsection (b)(5)(A), the owner or operator shall:

i) place a notice in the operating record identifying the constituents that have been detected; and
ii) notify the Agency that such a notice has been placed in the operating record.

BOARD NOTE: Subsection (b)(5)(B) is derived from 40 CFR 258.55(d)(1) (1992).

C) The owner or operator shall establish background concentrations for any constituents detected pursuant to subsection (b)(5)(A) in accordance with Section 811.320(e).

BOARD NOTE: Subsection (b)(5)(C) is derived from 40 CFR 258.55(d)(3) (1992).

D) Within 90 days of the initial monitoring in accordance with subsection (b)(5)(A), the owner or operator shall monitor for the constituents listed in 40 CFR 258.Appendix II on a semiannual basis during the assessment monitoring.

BOARD NOTE: Subsection (b)(5)(D) is derived from 40 CFR 258.55(d)(2) (1992).

E) The owner or operator may request the Agency to delete any of the 40 CFR 258.Appendix II constituents by demonstrating to the Agency that the deleted constituents are not reasonably expected to be in or derived from the waste contained in the leachate.

BOARD NOTE: Subsection (b)(5)(E) is derived from 40 CFR 258.55(b) (1992).

F) Within 14 days of finding an exceedance above the applicable groundwater quality standards in accordance with subsection (b)(3), the owner or operator shall:

i) place a notice in the operating record that identifies the constituents monitored under subsection (b)(1)(D) that have exceeded the groundwater quality standard;
ii) notify the Agency and the appropriate officials of the local municipality or county within whose boundaries the site is located that such a notice has been placed in the operating record; and
iii) notify all persons who own land or reside on land that directly overlies any part of the plume of contamination if contaminants have migrated off-site.

BOARD NOTE: Subsection (b)(5)(F) is derived from 40 CFR 258.55(g)(1)(i) through (iii) (1992).

G) If the concentrations of all 40 CFR 258.Appendix II constituents are shown to be at or below background values, using the statistical procedures in Section 811.320(e), for two consecutive sampling events, the owner or operator shall notify the Agency of this finding and may stop monitoring the 40 CFR 258.Appendix II constituents.

BOARD NOTE: Subsection (b)(5)(G) is derived from 40 CFR 258.55(e) (1992).

c) Assessment of Potential Groundwater Impact

An operator required to conduct a groundwater impact assessment in

accordance with subsection (b)(4) shall assess the potential impacts outside the zone of attenuation that may result from confirmed increases above the maximum allowable predicted concentration within the zone of attenuation, attributable to the facility, in order to determine if there is need for remedial action. In addition to the requirements of Section 811.317, the following shall apply:

1) The operator shall utilize any new information developed since the initial assessment and information from the detection and assessment monitoring programs and such information may be used for the recalibration of the GCT model; and

2) The operator shall submit the groundwater impact assessment and any proposed remedial action plans determined necessary pursuant to subsection (d) to the Agency within 180 days of the start of the assessment monitoring program.

d) Remedial Action. The owner or operator of a MSWLF unit shall conduct corrective action in accordance with Sections 811.324, 811.325, and 811.326. The owner or operator of a landfill facility, other than a MSWLF unit, shall conduct remedial action in accordance with this subsection.

1) The operator shall submit plans for the remedial action to the Agency. Such plans and all supporting information including data collected during the assessment monitoring shall be submitted within 90 days of determination of either of the following:

A) The groundwater impact assessment performed in accordance with subsection (c), indicates that remedial action is needed; or

B) Any confirmed increase above the applicable groundwater quality standards of Section 811.320 is determined to be attributable to the solid waste disposal facility in accordance with subsection (b).

2) If the facility has been issued a permit by the Agency, then the operator shall submit this information as an application for significant modification to the permit;

3) The operator shall implement the plan for remedial action within 90 days of the following:

A) Completion of the groundwater impact assessment under subsection (c) that requires remedial action;

B) Establishing that a violation of an applicable groundwater quality standard of Section 811.320 is attributable to the solid waste disposal facility in accordance with subsection (b)(3); or

C) Agency approval of the remedial action plan, where the facility has been permitted by the Agency.

4) The remedial action program shall consist of one or a combination of one or more of the following solutions:

A) Retrofit additional groundwater protective measures within the unit;

B) Construct an additional hydraulic barrier, such as a cutoff wall or slurry wall system;

C) Pump and treat the contaminated groundwater; or

D) Any other equivalent technique which will prevent further contamination of groundwater.

5) Termination of the Remedial Action Program

A) The remedial action program shall continue in accordance with the plan until monitoring shows that the concentrations of all monitored constituents are below the maximum allowable predicted concentration within the zone of attenuation, and below the applicable groundwater quality standards of Section 811.320 at or beyond the zone of attenuation, over a period of 4 consecutive quarters.

B) The operator shall submit to the Agency all information collected under subsection (d)(5)(A). If the facility is permitted then the operator shall submit this information as significant modification of the permit.

Section 811.320 Groundwater Quality Standards

a) Applicable Groundwater Quality Standards

1) Groundwater quality shall be maintained at each constituent's background concentration, at or beyond the zone of attenuation. The applicable groundwater quality standard established for any constituent shall be:

A) The background concentration; or

B) The Board established standard adjusted by the Board in accordance with the justification procedure of subsection (b).

2) Any statistically significant increase above an applicable groundwater quality standard established pursuant to subsection (a) that is attributable to the facility and which occurs at or beyond the zone of attenuation within 100 years after closure of the last unit accepting waste within such a facility shall constitute a violation.

3) For the purposes of this Part:

A) "Background concentration" means that concentration of a constituent that is established as the background in accordance with subsection (d); and

B) "Board established standard" is the concentration of a constituent adopted by the Board as a standard for public and food processing water supplies under 35 Ill. Adm. Code 302 or as a groundwater quality standard adopted by the Board pursuant to Section 14.4 of the Act or Section 8 of the Illinois Groundwater Protection Act, whichever is lower.

b) Justification for Adjusted Groundwater Quality Standards

1) An operator may petition the Board for an adjusted groundwater quality standard in accordance with the procedures specified in Section 28.1 of the Act and 35 Ill. Adm. Code 106.410 through 106.416.

2) For groundwater which contains naturally occurring constituents which meet the requirements of 35 Ill. Adm. Code 302.301, 302.304, and 302.305, the Board will specify adjusted groundwater quality standards no greater than those of 35 Ill. Adm. Code 302.301, 302.304, and 302.305, upon a demonstration by the operator that:

   A) The change in standards will not interfere with, or become injurious to, any present or potential beneficial uses for such waters;

   B) The change in standards is necessary for economic or social development, by providing information including, but not limited to, the impacts of the standards on the regional economy, social disbenefits such as loss of jobs or closing of landfills, and economic analysis contrasting the health and environmental benefits with costs likely to be incurred in meeting the standards; and

   C) All technically feasible and economically reasonable methods are being used to prevent the degradation of the groundwater quality.

3) Notwithstanding subsection (b)(2), in no case shall the Board specify adjusted groundwater quality standards for a MSWLF unit greater than the levels set forth below:

| Chemical | Concentration (mg/l) |
|---|---|
| Arsenic | 0.05 |
| Barium | 1.0 |
| Benzene | 0.005 |
| Cadmium | 0.01 |
| Carbon tetrachloride | 0.005 |
| Chromium (hexavalent) | 0.05 |
| 2,4-Dichlorophenoxy acetic acid | 0.1 |
| 1,4-Dichlorobenzene | 0.075 |
| 1,2-Dichloroethane | 0.005 |
| 1,1-Dichloroethylene | 0.007 |
| Endrin | 0.0002 |
| Fluoride | 4 |
| Lindane | 0.004 |
| Lead | 0.05 |
| Mercury | 0.002 |
| Methoxychlor | 0.1 |
| Nitrate | 10 |
| Selenium | 0.01 |
| Silver | 0.05 |
| Toxaphene | 0.005 |
| 1,1,1-Trichloromethane | 0.2 |
| Trichloroethylene | 0.005 |
| 2,4,5-Trichlorophenoxy acetic acid | 0.01 |
| Vinyl Chloride | 0.002 |

4) For groundwater which contains naturally occurring constituents which do not meet the standards of 35 Ill. Adm. Code 302.301, 302.304, and 302.305, the Board will specify adjusted groundwater quality standards, upon a demonstration by the operator that:

A) The groundwater does not presently serve as a source of drinking water;

B) The change in standards will not interfere with, or become injurious to, any present or potential beneficial uses for such waters;

C) The change in standards is necessary for economic or social development, by providing information including, but not limited to, the impacts of the standards on the regional economy, social disbenefits such as loss of jobs or closing of landfills, and economic analysis contrasting the health and environmental benefits with costs likely to be incurred in meeting the standards; and

D) The groundwater cannot presently, and will not in the future, serve as a source of drinking water because:

i) It is impossible to remove water in usable quantities;
ii) The groundwater is situated at a depth or location such that recovery of water for drinking purposes is not technologically feasible or economically reasonable;
iii) The groundwater is so contaminated that it would be economically or technologically impractical to render that water fit for human consumption;
iv) The total dissolved solids content of the groundwater is more than 3,000 mg/l and that water will not be used to serve a public water supply system; or
v) The total dissolved solids content of the groundwater exceeds 10,000 mg/l.

c) Determination of the Zone of Attenuation

1) The zone of attenuation, within which concentrations of constituents in leachate discharged from the unit may exceed the applicable groundwater quality standard of this Section, is a volume bounded by a vertical plane at the property boundary or 100 feet from the edge of the unit, whichever is less, extending from the ground surface to the bottom of the uppermost aquifer and excluding the volume occupied by the waste.

2) Zones of attenuation shall not extend to the annual high water mark of navigable surface waters.

3) Overlapping zones of attenuation from units within a single facility may be combined into a single zone for the purposes of establishing a monitoring network.

d) Establishment of Background Concentrations

1) The initial monitoring to determine background concentrations shall commence during the hydrogeological assessment required by Section 811.315. The background concentrations for those parameters identified in Sections 811.315(e)(1)(G) and 811.319(a)(2) and

(a)(3) shall be established based on quarterly sampling of wells for one year, monitored in accordance with the requirements of subsections (d)(2), (d)(3) and (d)(4), which may be adjusted during the operation of a facility. Statistical tests and procedures shall be employed, in accordance with subsection (e), depending on the number, type and frequency of samples collected from the wells, to establish the background concentrations. Adjustments to the background concentrations shall be made only if changes in the concentrations of constituents observed in upgradient wells over time are determined, in accordance with subsection (e), to be statistically significant. Background concentrations determined in accordance with this subsection shall be used for the purposes of establishing groundwater quality standards, in accordance with subsection (a). The operator shall prepare a list of the background concentrations established in accordance with this subsection. The operator shall maintain such a list at the facility, shall submit a copy of the list to the Agency for establishing standards in accordance with subsection (a), and shall provide updates to the list within ten days of any change to the list.

2) A network of monitoring wells shall be established upgradient from the unit, with respect to groundwater flow, in accordance with the following standards, in order to determine the background concentrations of constituents in the groundwater:

   A) The wells shall be located at such a distance that discharges of contaminants from the unit will not be detectable;

   B) The wells shall be sampled at the same frequency as other monitoring points to provide continuous background concentration data, throughout the monitoring period; and

   C) The wells shall be located at several depths to provide data on the spatial variability.

3) A determination of background concentrations may include the sampling of wells that are not hydraulically upgradient of the waste unit where:

   A) Hydrogeologic conditions do not allow the owner or operator to determine what wells are hydraulically upgradient of the waste; and

   B) Sampling at other wells will provide an indication of background concentrations that is representative of that which would have been provided by upgradient wells.

4) If background concentrations cannot be determined on site, then alternative background concentrations may be determined from actual monitoring data from the aquifer of concern, which includes, but is not limited to, data from another landfill site that overlies the same aquifer.

e) Statistical Analysis of Groundwater Monitoring Data

1) Statistical tests shall be used to analyze groundwater monitoring data. One or more of the normal theory statistical tests listed in subsection (e)(4) shall be chosen first for analyzing the data set

or transformations of the data set. Where such normal theory tests are demonstrated to be inappropriate, tests listed in subsection (e)(5) or a test in accordance with subsection (e)(6) shall be used. Any statistical test chosen from subsections (e)(4) or (e)(5), the level of significance (Type 1 error level) shall be no less than 0.01, for individual well comparisons, and no less than 0.05, for multiple well comparisons. The statistical analysis shall include, but not be limited to, the accounting of data below the detection limit of the analytical method used, the establishment of background concentrations and the determination of whether statistically significant changes have occurred in:

A) The concentration of any chemical constituent with respect to the background concentration or maximum allowable predicted concentration; and

B) The established background concentration of any chemical constituents over time.

2) The statistical test or tests used shall be based upon the sampling and collection protocol of Sections 811.318 and 811.319.

3) Monitored data that are below the level of detection shall be reported as not detected (ND). The level of detection for each constituent shall be the minimum concentration of that constituent which can be measured and reported with 99 percent confidence that the true value is greater than zero, which is defined as the method detection limit (MDL). The following procedures shall be used to analyze such data, unless an alternative procedure in accordance with subsection (e)(6), is shown to be applicable:

A) Where the percentage of nondetects in the data base used is less than 15 percent, the operator shall replace NDs with the MDL divided by two, then proceed with the use of one or more of the Normal Theory statistical tests listed in subsection (e)(4);

B) Where the percentage of nondetects in the data base or data transformations used is between 15 and 50 percent, and the data are normally distributed, the operator shall use Cohen's adjustment to the sample mean and standard deviation, followed by one or more of the tests listed in subsection (e)(4)(C). However, where data are not normally distributed, the operator shall use an applicable nonparametric test from subsection (e)(5);

C) Where the percentage of nondetects in the database used is above 50 percent, then the owner or operator shall use the test of proportions listed in subsection (e)(4).

4) Normal theory statistical tests:

A) Student t-test including, but not limited to, Cochran's Approximation to the Behren-Fisher (CABF) t-test and Averaged Replicate (AR) t-test.

B) Parametric analysis of variance (ANOVA) followed by one or more of the multiple comparison procedures including, but not limited to, Fisher's Least Significant Difference (LSD),

Student Newman-Kuel procedure, Duncan's New Multiple Range Test and Tukey's W procedure.

C) Control Charts, Prediction Intervals and Tolerance Intervals, for which the type I error levels shall be specified by the Agency in accordance with the requirements of 35 Ill. Adm. Code 724.197(i).

5) Nonparametric statistical tests shall include: Mann-Whitney U-test, Kruskal-Wallis test, a nonparametric analysis of variance (ANOVA) for multiple comparisons or the Wilcoxon Rank Sum test.

6) Any other statistical test based on the distribution of the sampling data may be used, if it is demonstrated to meet the requirements of 35 Ill.Adm Code 724.197(i).

BOARD NOTE: Subsection (b)(3) is derived from 40 CFR 258.40 Table 1. (1992).

Section 811.321 Waste Placement

a) Phasing of Operations

1) Waste disposal operations shall move from the lowest portions of the unit to the highest portions. Except as provided in subsection (a)(2), the placement of waste shall begin in the lowest part of the active face of the unit, located in the part of the facility most downgradient with respect to groundwater flow.

2) The operator may dispose of wastes in areas other than those specified in subsection (a)(1) only under any of the following conditions:

A) Climatic conditions, such as wind and precipitation, are such that the placement of waste in the bottom of the unit would cause water pollution, litter or damage to any part of the liner;

B) The topography of the land surrounding the unit makes the procedure of subsection (a)(1) environmentally unsound, for example, because steep slopes surround the unit; or

C) When groundwater monitoring wells, constructed in accordance with the requirements of Section 811.319, are placed 50 feet, or less, downgradient from the filled portions of the unit.

b) Initial Waste Placement

1) Construction, compaction and earth moving equipment shall be prohibited from operating directly on the leachate collection piping system until a minimum of five feet of waste has been mounded over the system.

2) Construction, compaction and earth moving equipment shall be prohibited from operating directly on the leachate drainage blanket. Waste disposal operations shall begin at the edge of the drainage layer by carefully pushing waste out over the drainage layer.

3) An initial layer of waste, a minimum of five feet thick, shall be

placed over the entire drainage blanket immediately after construction, but prior to the onset of weather conditions that may cause the compacted earth liner to freeze.

4) Waste shall not be placed over areas that are subject to freezing conditions until the liner has been inspected, tested, and reconstructed (if necessary) to meet the requirements of Section 811.306.

Section 811.322 Final Slope and Stabilization

a) All final slopes shall be designed and constructed to a grade capable of supporting vegetation and which minimizes erosion.

b) All slopes shall be designed to drain runoff away from the cover and which prevents ponding. No standing water shall be allowed anywhere in or on the unit.

c) Vegetation

1) Vegetation shall be promoted on all reconstructed surfaces to minimize wind and water erosion of the final protective cover;

2) Vegetation shall be compatible with the climatic conditions;

3) Vegetation shall require little maintenance;

4) Vegetation shall consist of a diverse mix of native and introduced species that is consistent with the postclosure land use;

5) Vegetation shall be tolerant of the landfill gas expected to be generated;

6) The root depth of the vegetation shall not exceed the depth of the final protective cover system; and

7) Temporary erosion control measures, including but not limited to mulch straw, netting and chemical soil stabilizers, shall be undertaken while vegetation is being established.

d) Structures Constructed Over the Unit

1) Structures constructed over the unit must be compatible with the land use;

2) Such structures shall be designed to vent gases away from the interior; and

3) Such structures must in no way interfere with the operation of a cover system, gas collection system, leachate collection system or any monitoring system.

Section 811.323 Load Checking Program

a) The operator shall implement a load checking program that meets the requirements of this Section, for detecting and discouraging attempts to dispose regulated hazardous wastes at the facility. For purposes of this Section and Section 811.406, "regulated hazardous wastes" are wastes defined as such under RCRA, at 35 Ill. Adm. Code 721, and subject

to regulations under 35 Ill. Adm. Code: Subtitle G.

b) In addition to checking for hazardous waste in accordance with subsection (a), the load checking program at a MSWLF unit shall include waste load inspection for detecting and discouraging attempts to dispose "polychlorinated biphenyl wastes" as defined in 40 CFR 761.3 (1992).

BOARD NOTE: Subsection (b) is derived from 40 CFR 258.20(a) (1992).

c) The load checking program shall consist of, at a minimum, the following components:

1) Random inspections

A) An inspector designated by the facility shall examine at least three random loads of solid waste delivered to the landfill on a random day each week. The drivers randomly selected by the inspector shall be directed to discharge their loads at a separate, designated location within the facility. The facility shall conduct a detailed inspection of the discharged material for any regulated hazardous or other unacceptable wastes that may be present. Cameras or other devices may be used to record the visible contents of solid waste shipments. Where such devices are employed, their use should be designated on a sign posted near the entrance to the facility.

B) If regulated hazardous wastes or other unacceptable wastes are suspected, the facility shall communicate with the generator, hauler or other party responsible for shipping the waste to the facility to determine the identity of the waste.

2) Recording inspection results

Information and observations derived from each random inspection shall be recorded in writing and retained at the facility for at least three years. The recorded information shall include, at a minimum, the date and time of the inspection; the names of the hauling firm and the driver of the vehicle; the vehicle license plate number; the source of the waste, as stated by the driver; and observations made by the inspector during the detailed inspection. The written record shall be signed by both the inspector and the driver.

3) Training

The solid waste management facility shall train designated inspectors, equipment operators, weigh station attendants, spotters at large facilities, and all other appropriate facility personnel in the identification of potential sources of regulated hazardous wastes and other unacceptable wastes, including but not limited to PCBs. The training program shall emphasize familiarity with containers typically used for regulated hazardous wastes and with labels for regulated hazardous wastes, under RCRA, and for hazardous materials under the Hazardous Materials Transportation Act (49 U.S.C. 1801 et seq.).

d) Handling Regulated Hazardous Wastes

1) If any regulated hazardous wastes are identified by random load

checking, or are otherwise discovered to be improperly deposited at the facility, the facility shall promptly notify the Agency, the person responsible for shipping the wastes to the landfill, and the generator of the wastes, if known. Waste loads identical to the regulated hazardous waste identified through the random load checking which have not yet been deposited in the landfill shall not be accepted. The area where the wastes are deposited shall immediately be cordoned off from public access. The solid waste management facility shall assure the cleanup, transportation and disposal of the waste at a permitted hazardous waste management facility.

2) The party responsible for transporting the waste to the solid waste management facility shall be responsible for the costs of such proper cleanup, transportation and disposal.

3) Subsequent shipments by persons or sources found or suspected to be previously responsible for shipping regulated hazardous waste shall be subject to the following special precautionary measures prior to the solid waste management facility accepting wastes. The operator shall use precautionary measures such as questioning the driver concerning the waste contents prior to discharge and visual inspection during the discharge of the load at the working face or elsewhere.

Section 811.324 Corrective Action Measures for MSWLF Units

a) The owner or operator shall initiate an assessment of corrective action measures within 14 days of the following:

1) The groundwater impact assessment, performed in accordance with subsection 811.319(c), indicates that remedial action is needed; or

2) The assessment monitoring, performed in accordance with subsection 811.319(b), indicates that a confirmed increase above the applicable groundwater quality standards of Section 811.320 is attributable to the solid waste disposal facility.

b) The owner or operator shall complete the corrective action assessment within 90 days of initiating the assessment of corrective action measures in accordance with subsection (a).

c) The owner or operator shall continue to monitor in accordance with the assessment monitoring program, as specified in Section 811.319(b).

d) The assessment shall include an analysis of the effectiveness of various potential corrective action measures in meeting all of the requirements and objectives of the remedy, as described under Section 811.325, addressing at least the following:

1) The performance, reliability, each of implementation, and potential impacts of appropriate potential remedies, including safety impacts, cross-media impacts, and control of exposure to any residual contamination;

2) The time required to begin and complete the remedy;

3) The costs of remedy implementation; and

4) The institutional requirements, such as State or local permit requirements or other environmental or public health requirements, that may substantially affect implementation of the remedies.

e) The owner or operator must discuss the results of the corrective action measures assessment prior to the selection of a remedy in a public meeting with interested and affected parties. Prior to the public meeting, the owner or operator of the MSWLF unit shall submit to the Agency a report describing the results of the corrective action measures assessment.

BOARD NOTE: Requirements of this Section are derived from 40 CFR 258.56 (1992).

Section 811.325 Selection of Remedy for MSWLF Units

a) Within 90 days of the completion of the corrective action measures assessment conducted under Section 811.324, the owner or operator of a MSWLF unit shall:

1) Select a remedy based on the assessment results that, at a minimum, meets the requirements of subsection (b); and

2) Submit to the Agency an application for a significant modification to the landfill permit describing the selected remedy and how it meets the standards set forth in subsection (b).

b) Remedies selected under this Section must meet the following requirements:

1) They must be protective of human health and the environment;

2) They must attain the groundwater quality standards prescribed at Section 811.320;

3) They must control the sources of release so as to reduce or eliminate, to the maximum extent practicable, further releases of constituents detected under the assessment monitoring into the environment that may pose a threat to human health or the environment; and

4) They must comply with standards for management of wastes as specified in Section 811.326(d).

c) In selecting a remedy that meets the requirements of subsection (b), the owner or operator shall consider the following evaluation factors:

1) The long- and short-term effectiveness and protectiveness of the potential remedies, along with the degree of certainty that the remedy will prove successful based on consideration of the following factors:

A) The magnitude of reduction of existing risks;

B) The magnitude of residual risks in terms of likelihood of further releases due to waste remaining following implementation of a remedy;

C) The type and degree of long-term management required,

including monitoring, operation, and maintenance;

D) Any short-term risks that might be posed to the community, workers, or the environment during implementation of such a remedy, including potential threats to human health and the environment associated with excavation, transportation, and redisposal or containment;

E) The length of time until full protection is achieved;

F) Any potential for exposure of humans and environmental receptors to remaining wastes, considering the potential threat to human health and the environment associated with excavation, transportation, redisposal, or containment;

G) The long-term reliability of engineering and institutional controls; and

H) The potential need for replacement of the remedy.

2) The effectiveness of the remedy in controlling the source to reduce further releases based on consideration of the following factors:

A) The extent to which containment practices will reduce further releases; and

B) The extent to which treatment technologies may be used.

3) The ease or difficulty of implementing potential remedies based on consideration of the following types of factors:

A) The degree of difficulty associated with constructing the technology;

B) The expected operational reliability of the technologies;

C) The need to coordinate with and obtain necessary approvals and permits from other agencies;

D) The availability of necessary equipment and specialists; and

E) The available capacity and location of needed treatment, storage, and disposal services.

4) The practicable capability of the owner or operator to implement the remedies, including a consideration of the technical and economic capability.

5) The degree to which community concerns are addressed by potential remedies.

d) Schedule for implementing remedial action.

1) The owner or operator shall specify as part of the selected remedy a schedule(s) for initiating and completing remedial activities. Such a schedule must require the initiation of remedial activities within a reasonable period of time, taking into consideration the factors set forth in subsections (d)(3)(A) through (d)(3)(H).

2) The Agency shall specify the time period for initiating remedial action in the facility's permit.

e) The owner or operator shall consider the following factors in determining the schedule of remedial activities:

A) The extent and nature of contamination;

B) The practical capabilities of remedial technologies in achieving compliance with the groundwater quality standards established under Section 811.320 and other objectives of the remedy;

C) The availability of treatment or disposal capacity for wastes managed during implementation of the remedy;

D) The desirability of utilizing technologies that are not currently available, but which may offer significant advantages over already available technologies in terms of effectiveness, reliability, safety, or ability to achieve remedial objectives;

E) Any potential risks to human health and the environment from exposure to contamination prior to completion of the remedy;

F) Any resource value of the aquifer including:

i) Any current and future uses;

ii) The proximity and withdrawal rate of users;

iii) The groundwater quantity and quality;

iv) The potential damage to wildlife, crops, vegetation, and physical structures caused by exposure to waste constituent;

v) The hydrogeologic characteristic of the facility and surrounding land;

vi) The groundwater removal and treatment costs;

vii) The cost and availability of alternative water supplies;

G) The practicable capability of the owner or operator to implement the remedies; and

H) Any other relevant factors.

e) The Agency shall determine what remediation of a release of one or more constituents monitored in accordance with Section 811.319 from a MSWLF unit is not necessary if the owner or operator demonstrates to the Agency that:

1) The groundwater is additionally contaminated by substances that have originated from a source other than the MSWLF unit and those substances are present in such concentrations that cleanup of the release from the MSWLF unit would provide no significant reduction in risk to actual or potential receptors; or

2) The constituents are present in groundwater that:

A) Is not currently or reasonably expected to be a source of drinking water; and

B) Is not hydraulically connected with waters to which the hazardous constituents are migrating or are likely to migrate in concentrations that would exceed the groundwater quality standards established under Section 811.320; or

3) The remediation of the release is technically impracticable; or

4) The remediation results in unacceptable cross-media impacts.

f) A determination by the Agency pursuant to subsection (e) shall not affect the Agency's authority to require the owner or operator to undertake source control measures or other measures that may be necessary to eliminate or minimize further releases to the groundwater, to prevent exposure to the groundwater, or to remediate the groundwater to concentrations that are technically practicable and which reduce threats to human health or the environment.

BOARD NOTE: The requirements of this Section are derived from 40 CFR 258.57 (1992).

Section 811.326 Implementation of the corrective action program at MSWLF Units

a) Based on the schedule established under Section 811.325(d) for initiation and completion of corrective action, the owner or operator shall:

1) Establish and implement a corrective action groundwater monitoring program that:

A) At a minimum, meets the requirements of an assessment monitoring program under Section 811.319(b);

B) Indicates the effectiveness of the remedy; and

C) Demonstrates compliance with groundwater protection standard pursuant to subsection (e) of this Section.

2) Implement the remedy selected pursuant to Section 811.325.

3) Take any interim measures necessary to ensure the protection of human health and the environment. The interim measures should, to the greatest extent practicable, be consistent with the objective of and contribute to the performance of any remedy that may be required pursuant to Section 811.325. The owner or operator shall consider the following factors in determining whether interim measures are necessary:

A) The time required to develop and implement a final remedy;

B) Any actual or potential exposure of nearby populations or environmental receptors to hazardous constituents;

C) Any actual or potential contamination of drinking water supplies or sensitive ecosystems;

D) Any further degradation of the groundwater that may occur if remedial action is not initiated expeditiously;

E) The weather conditions that may cause hazardous constituents to migrate or be released;

F) Any risks of fire or explosion, or potential for exposure to hazardous constituents as a result of an accident or failure of a container or handling system; and

G) Any other situations that may pose threats to human health and the environment.

b) If an owner or operator determines, based on information developed after implementation of the remedy has begun or other information, that compliance with requirements of Section 811.325(b) are not being achieved through the remedy selected, the owner or operator shall:

1) Implement other methods or techniques that could practicably achieve compliance with the requirements, unless the owner or operator makes the determination under subsection (c) of this Section.

2) Submit to the Agency, prior to implementing any alternative methods pursuant to subsection (b)(1), an application for a significant modification to the permit describing the alternative methods or techniques and how they meet the standards of Section 811.325(b).

c) If the owner or operator determines that compliance with the requirements of Section 811.325(b) cannot be practically achieved with any currently available methods, the owner or operator shall:

1) Obtain the certification of a qualified groundwater scientist or a determination by the Agency that compliance with requirements under Section 811.325(b) cannot be practically achieved with any currently available methods.

2) Implement alternative measures to control exposure of humans or the environment to residual contamination, as necessary to protect human health and the environment.

3) Implement alternative measures for control of the sources of contamination, or for removal or decontamination of equipment, units, devices, or structures that are:

A) Technically practicable; and
B) Consistent with the overall objective of the remedy.

4) Submit to the Agency, prior to implementing the alternative measures in accordance with subsection (c), an application for a significant modification to the permit justifying the alternative measures.

5) For purposes of this Section, a "qualified groundwater scientist' is a scientist or an engineer who has received a baccalaureate or postgraduate degree in the natural sciences or engineering and has sufficient training and experience in groundwater hydrology and related fields as may be demonstrated by state registration, professional certifications, or completion of accredited university

programs that enable that individual to make sound professional judgments regarding groundwater monitoring, contaminant fate and transport, and corrective action.

d) All solid wastes that are managed pursuant to a remedy required under Section 811.325, or pursuant to an interim measure required under subsection (a)(3), shall be managed by the owner or operator in a manner:

1) That is protective of human health and the environment; and

2) That complies with applicable requirements of Part 811.

e) Remedies selected pursuant to Section 811.325 shall be considered complete when:

1) The owner or operator complies with the groundwater quality standards established under Section 811.320 at all points within the plume of contamination that lie beyond the zone of attenuation established pursuant to Section 811.320;

2) Compliance with the groundwater quality standards established under Section 811.320 has been achieved by demonstrating that concentrations of the constituents monitored under the assessment monitoring program under Section 811.319(b) have not exceeded the groundwater quality standards for a period of three consecutive years using the statistical procedures and performance standards in Section 811.320(e). The Agency may specify an alternative time period during which the owner or operator must demonstrate compliance with the groundwater quality standard(s). The Agency shall specify such an alternative time period by considering the following factors:

A) The extent and concentration of the release(s);

B) The behavior characteristics of the hazardous constituents in the groundwater;

C) The accuracy of monitoring or modeling techniques, including any seasonal, meteorological, or other environmental variabilities that may affect the accuracy; and

D) The characteristics of the groundwater; and

3) All actions required to complete the remedy have been satisfied.

f) Within 14 days of the completion of the remedy, the owner or operator shall submit to the Agency an application for a significant modification of the permit including a certification that the remedy has been completed in compliance with the requirements of subsection (e). The certification must be signed by the owner or operator and by a qualified groundwater scientist.

g) Upon Agency review and approval of the certification that the corrective action has been completed, in accordance with subsection (e), the Agency shall release the owner or operator from the financial assurance requirements for corrective action pursuant to Subpart G of this Part.

BOARD NOTE: Requirements of this Section are derived from 40 CFR 258.58 (1992).

## SUBPART D: MANAGEMENT OF SPECIAL WASTES AT LANDFILLS

### Section 811.401 Scope and Applicability

a) This Subpart applies to all landfills permitted by the Agency pursuant to Section 21 of the Act, including landfills operated on-site, with or without a permit, that accept special wastes.

b) The standards of this Subpart apply in addition to the standards of 35 Ill. Adm. Code 809.

c) Inspection, testing or acceptance of waste by a solid waste management facility shall not relieve the generator or transporter of responsibility for compliance with the requirements of 35 Ill. Adm. Code: Subtitle G.

### Section 811.402 Notice to Generators and Transporters

A prominent sign at the entrance to each solid waste management facility shall state that disposal of hazardous waste is prohibited and, if it is a facility permitted by the Agency to accept special wastes pursuant to 35 Ill. Adm. Code 807, also state that special waste will be accepted only if accompanied by an identification record and a manifest, unless such waste is exempted from the manifest requirements of this Part and 35 Ill. Adm. Code 809.Subpart E.

### Section 811.403 Special Waste Manifests

a) Each special waste accepted for disposal at a permitted solid waste management facility shall be accompanied by a manifest containing the following information, unless such special waste is disposed at an on-site facility and exempted, in accordance with 35 Ill. Adm. Code 809.211, from the manifest requirement:

1) The name of the generator of the special waste;

2) When and where the special waste was generated;

3) The name of the special waste hauler;

4) The name of the solid waste management facility to which it is shipped as a final destination point;

5) The date of delivery;

6) The name, waste stream permit number (if applicable) and quantity of special waste delivered to the hauler;

7) The signature of the person who delivered the special waste to the special waste hauler, acknowledging such delivery;

8) The signature of the special waste hauler, acknowledging receipt of the special wastes; and

9) The signature of the person who accepted the special waste at its final destination, acknowledging acceptance of the special waste.

b) A permitted facility that accepts special waste must be designated on

the manifest as the final destination point. Any subsequent delivery of the special waste or any portion or product thereof to a special waste hauler shall be conducted under a transportation record initiated by the permitted solid waste management facility.

c) Distribution of Manifests After Delivery

1) The receiving solid waste management facility, shall accept special waste only if accompanied by three copies of the manifest from the hauler. The hauler shall retain one copy.

2) The receiving solid waste management facility shall:

A) Send one copy of the completed transportation record to the person who delivered the special waste to the special waste hauler (usually the generator, or another special waste management facility);

B) Send one copy of each signed manifest to the Agency in accordance with the requirements of 35 Ill. Adm. Code 809; and

C) Send information on rejected loads to the Agency in a quarterly report.

d) Every person who delivers special waste to a special waste hauler, every person who accepts special waste from a special waste hauler and every special waste hauler shall retain a copy of the special waste transportation record as a record of each special waste transaction. These copies shall be retained for three years, and shall be made available at reasonable times for inspection and photocopying by the Agency pursuant to Section 4(d) of the Act.

Section 811.404 Identification Record

a) Each special waste disposed of at a facility (including special wastes generated at the facility) shall be accompanied by a special waste profile identification sheet, from the waste generator, that certifies the following:

1) The generator's name and address;

2) The transporter's name and telephone number;

3) The name of waste;

4) The process generating the waste;

5) Physical characteristics of waste (e.g., color, odor, solid or liquid, flash point);

6) The chemical composition of the waste;

7) The metals content of the waste;

8) Hazardous characteristics (including identification of wastes deemed hazardous by the United States Environmental Protection Agency or the state);

9) Presence of polychlorinated biphenyls (PCB)s or 2,3,7,8-

tetrachlorodibenzodioxin (2,3,7,8-TCDD); and

10) Any other information, such as the result of any test carried out in accordance with Section 811.202, that can be used to determine:

A) Whether the special waste is regulated as a hazardous waste, as defined at 35 Ill. Adm. Code 721;

B) Whether the special waste is of a type that is permitted for or has been classified, in accordance with 35 Ill. Adm. Code 809, for storage, treatment, or disposal at the facility; and

C) Whether the method of storage, treatment, or disposal, using the methods available at the facility, is appropriate for the waste.

b) Special waste recertification

Each subsequent shipment of a special waste from the same generator must be accompanied by a transportation record in accordance with 35 Ill. Adm. Code 811.403(b), a copy of the original special waste profile identification sheet, and either:

1) A special waste recertification by the generator describing whether there have been changes in the following:

A) Laboratory analysis (copies to be attached);

B) Raw material in the waste-generating process;

C) The waste-generating process itself;

D) The physical or hazardous characteristics of the waste; and

E) New information on the human health effects of exposure to the waste; or

2) Certification indicating that any change in the physical or hazardous characteristic of the waste is not sufficient to require a new special waste profile.

Section 811.405 Recordkeeping Requirements

The solid waste management facility operator shall retain copies of any special waste profile identification sheets, special waste recertifications, certifications of representative sample, special waste laboratory analyses, special waste analysis plans, and any waivers of requirements (prohibitions, special waste management authorization, and operating requirements) at the facility until the end of the postclosure care period.

Section 811.406 Procedures for Excluding Regulated Hazardous Wastes

The operator shall implement a load checking program that meets the requirements of Section 811.323 for detecting and discouraging attempts to dispose of regulated hazardous wastes at the facility.

## SUBPART E: CONSTRUCTION QUALITY ASSURANCE PROGRAMS

### Section 811.501 Scope and Applicability

All structures necessary to comply with the requirements of this Part shall be constructed according to a construction quality assurance program that, at a minimum, meets the requirement of this Subpart.

### Section 811.502 Duties and Qualifications of Key Personnel

a) Duties and Qualifications of the Operator

The operator shall designate a third party contractor, a person other than the operator or an employee of the operator, as the construction quality assurance (CQA) officer.

b) Duties and Qualifications of the CQA officer

1) The CQA officer shall supervise and be responsible for all inspections, testing and other activities required to be implemented as part of the CQA program under this Subpart.

2) The CQA officer shall be a professional engineer.

### Section 811.503 Inspection Activities

a) The CQA officer shall be present to provide supervision and assume responsibility for performing all inspections of the following activities:

1) Compaction of the subgrade and foundation to design parameters;

2) Installation of the compacted earth liner;

3) Installation of a geomembrane;

4) Installation of slurry trenches or cutoff walls;

5) Installation of the leachate drainage and collection system;

6) Application of final cover;

7) Installation of gas control facilities; and

8) Construction of ponds, ditches, lagoons and berms.

b) If the CQA officer is unable to be present to perform, as required by subsection (a), then the CQA officer shall provide, in writing, reasons for his absence, a designation of a person who shall exercise professional judgement in carrying out the duties of a CQA officer as the designated CQA officer-in-absentia, and a signed statement that the CQA officer assumes full personal responsibility for all inspections performed and reports prepared by the designated CQA officer-in-absentia during the absence of the CQA.

### Section 811.504 Sampling Requirements

A sampling program shall be implemented as part of the CQA plan, for all construction activities, in order to ensure, at a minimum, that construction

materials and operations meet the following requirements:

a) The sampling program shall be designed prior to construction.

b) The sampling program shall be based upon statistical sampling techniques and shall establish and specify criteria for acceptance or rejection of materials and operations.

Section 811.505 Documentation

a) A daily summary report shall be prepared by the CQA officer, or under the direct supervision of the CQA officer, during each day of activity. The report shall contain, at a minimum:

1) The date;

2) A summary of the weather conditions;

3) A summary of locations where construction is occurring;

4) Equipment and personnel on the project;

5) A summary of any meetings held and attendees;

6) A description of all materials used and references or results of testing and documentation;

7) The calibration and recalibration of test equipment;

8) The daily inspection report from each inspector.

b) Daily Inspection Reports

Each inspector shall complete a daily inspection report containing the following information:

1) The location;

2) The type of inspection;

3) The procedure used;

4) Test data;

5) The results of the activity;

6) Personnel involved in the inspection and sampling activities; and

7) The signature of the inspector.

c) Photographic Records

Photographs may be used as tools to document the progress and acceptability of the work and may be incorporated into the daily summary report, daily inspection report, and an acceptance report. Each photo shall be identified with the following information:

1) The date, time and location of photograph;

2) The name of photographer; and

3) The signature of photographer.

d) Acceptance Reports

Upon completion of the construction of each major phase, the CQA officer shall submit an acceptance report to the Agency. The acceptance report shall be submitted before the structure is placed into service and shall contain the following:

1) A certification by the CQA officer that the construction has been prepared and constructed in accordance with the engineering design;

2) As-built drawings; and

3) All daily summary reports.

Section 811.506 Foundations and Subbases

a) The CQA officer shall identify and ensure that the site investigation is carried out in accordance with the plans, identify unexpected conditions and record all modifications to the plans and construction procedures on the as-built drawings.

b) The CQA officer shall observe soil and rock surfaces for joints, fractures and depressions, document the filling of all joints and fractures and document the removal and filling of local sand deposits on the as-built drawings.

c) The CQA officer shall ensure that there are no moisture seeps and that all soft, organic or other undesirable materials are removed.

Section 811.507 Compacted Earth Liners

a) Requirements for a Test Liner

A test fill shall be constructed before construction of the actual, full-scale compacted earth liner, in accordance with the following requirements:

1) The test liner shall be constructed from the same soil material, design specifications, equipment and procedures as are proposed for the full-scale liner;

2) The test fill shall be at least four times the width of the widest piece of equipment to be used;

3) The test fill shall be long enough to allow the equipment to reach normal operating speed before reaching the test area;

4) At least three lifts shall be constructed;

5) The test fill shall be tested as described below for each of the following physical properties using tests to ensure a statistically valid sample size:

A) Field testing techniques shall be used to determine the hydraulic conductivity.

B) Samples shall also be tested in the laboratory for hydraulic conductivity. The laboratory results shall be evaluated to determine if there is a statistical correlation to the field testing results.

C) Other engineering parameters, including but not limited to particle size distribution, plasticity, water content, and in-place density, that are needed to evaluate the full-scale liner shall be determined.

6) Additional test fills shall be constructed for each time the material properties of a new borrow source changes or for each admixture or change in equipment or procedures; and

b) Construction of a test fill or the requirements for an additional test fill may be omitted if a full-scale liner or a test fill has been previously constructed in compliance with this subsection and documentation and is available to demonstrate that the previously constructed liner meets the requirements of subsection (a).

c) The CQA officer shall inspect the construction and testing of test fills to ensure that the requirements of subsection (a) are met. During construction of the actual, full-scale compacted earth liner, the CQA officer shall ensure the following:

1) Use of same compaction equipment as used in test fill;

2) Use of same procedures, such as number of passes and speed;

3) Uniformity of coverage by compaction equipment;

4) Consistent achievement of density, water content and permeability of each successive lift;

5) Use of methods to bond successive lifts together;

6) Achievement of liner strength on sidewalls;

7) Contemporaneous placement of protective covering to prevent drying and desiccation, where necessary;

8) Prevention of the placement of frozen material or the placement of material on frozen ground;

9) Prevention of damage to completed liner sections; and

10) That construction proceeds only during favorable climatic conditions.

Section 811.508 Geomembranes

The CQA officer shall exercise professional judgement to certify the following:

a) That the bedding material contains no undesirable objects;

b) That the placement plan has been followed;

c) That the anchor trench and back-fill are constructed to prevent damage to the geomembrane;

d) That all tears, rips, punctures, and other damage are repaired; and

e) That all geomembrane seams are properly constructed and tested in accordance with the manufacturer's specifications.

Section 811.509 Leachate Collection Systems

a) The CQA officer shall exercise professional judgement to certify that pipe sizes, material, perforations, placement and pipe grades are in accordance with the design.

b) The CQA officer shall exercise professional judgement to certify that all soil materials used for the drainage blanket and graded filters meet the required size and gradation specifications in the design plan and are placed in accordance with the design plans.

c) The CQA officer shall inspect all prefabricated structures for conformity with design specifications and for defective manufacturing.

## SUBPART G: FINANCIAL ASSURANCE

Section 811.700 Scope, Applicability and Definitions

a) This Subpart provides procedures by which the owner or operator of a permitted waste disposal facility provides financial assurance satisfying the requirements of Section 21.1(a) of the Act.

b) Financial assurance may be provided, as specified in Section 811.706, by a trust agreement, a bond guaranteeing payment, a bond guaranteeing payment or performance, a letter of credit, insurance or self-insurance. The owner or operator shall provide financial assurance to the Agency before the receipt of the waste.

c) Except as provided in subsection (f), this Subpart does not apply to the State of Illinois, its agencies and institutions, or to any unit of local government; provided, however, that any other persons who conduct such a waste disposal operation on a site that is owned or operated by such a governmental entity shall provide financial assurance for closure and postclosure care of the site.

d) The owner or operator is not required to provide financial assurance pursuant to this Subpart if the owner or operator demonstrates:

1) That closure and postclosure care plans filed pursuant to 35 Ill. Adm. Code 724 or 725 will result in closure and postclosure care of the site in accordance with the requirements of this Part; and

2) That the owner or operator has provided financial assurance adequate to provide for such closure and postclosure care pursuant to 35 Ill. Adm. Code 724 or 725.

e) Definition: "Assumed closure date" means the date during the next permit term on which the costs of premature final closure of the facility, in accordance with the standards of this Part, will be greatest.

f) On or after April 9, 1995, no person, other than the State of Illinois, its agencies and institutions, shall conduct any disposal operation at a MSWLF unit that requires a permit under subsection (d) of Section 21 of the Act, unless that person complies with the financial assurance requirements of this Part.

g) The standards adopted in this subpart that are identical in substance to the federal Subtitle D regulations that are individually indicated as applicable to MSWL units shall not apply to such units until April 9, 1995.

BOARD NOTE: Subsection (f) clarifies the applicability of the financial assurance requirements to local governments since the Subtitle D regulations exempt only federal and state governments from financial assurance requirements (40 CFR 258.70 (1992)).

BOARD NOTE: The compliance dates specified in subsections (f) and (g) reflect the revisions adopted by the USEPA in the Federal Register Notification published on October 1, 1993 (see 58 FR 51536).

Section 811.701 Upgrading Financial Assurance

a) The owner or operator shall maintain financial assurance equal to or greater than the current cost estimate calculated pursuant to Section 811.704 at all times, except as otherwise provided by subsection (b).

b) The owner or operator shall increase the total amount of financial assurance so as to equal the current cost estimate within 90 days after any of the following occurrences:

1) An increase in the current cost estimate;

2) A decrease in the value of a trust fund;

3) A determination by the Agency that an owner or operator no longer meets the gross revenue test of Section 811.715(d) or the financial test of Section 811.715(e); or,

4) Notification by the owner or operator that the owner or operator intends to substitute alternative financial assurance, as specified in Section 811.706, for self-insurance.

c) The owner or operator of a MSWLF unit shall annually make adjustments for inflation if required pursuant to Section 811.704(k)(2) or 811.705(d).

Section 811.702 Release of Financial Institution

The Agency shall release a trustee, surety, insurer or other financial institution when:

a) An owner or operator substitutes alternative financial assurance such that the total financial assurance for the site is equal to or greater than the current cost estimate, without counting the amounts to be released; or

b) The Agency releases the owner or operator from the requirements of this Subpart pursuant to 35 Ill. Adm. Code 813.403(b).

Section 811.703 Application of Proceeds and Appeals

a) The Agency may sue in any court of competent jurisdiction to enforce its rights under financial instruments. The filing of an enforcement action before the Board is not a condition precedent to such an Agency action, except when this Subpart or the terms of the instrument provide otherwise.

b) As provided in Titles VIII and IX of the Act and 35 Ill. Adm. Code 103 and 104, the Board may order modifications in permits to change the type or amount of financial assurance pursuant to an enforcement action or a variance petition. Also, the Board may order that an owner or operator modify a closure or postclosure care plan or order that proceeds from financial assurance be applied to the execution of a closure or postclosure care plan.

c) The following Agency actions may be appealed to the Board as a permit denial pursuant to 35 Ill. Adm. Code 105 and Section 21.5(e) of the Act:

1) A refusal to accept financial assurance tendered by the owner or operator;

2) A refusal to release the owner or operator from the requirement to maintain financial assurance;

3) A refusal to release excess funds from a trust;

4) A refusal to approve a reduction in the penal sum of a bond;

5) A refusal to approve a reduction in the amount of a letter of credit;

6) A refusal to approve a reduction in the face amount of an insurance policy; or

7) A determination that an owner or operator no longer meets the gross revenue test or financial test.

Section 811.704 Closure and Postclosure Care and Corrective Action Cost Estimates

a) Written cost estimate. The owner or operator shall have a written estimate of the cost of closure of all parts of the facility where wastes have been deposited in accordance with the requirements of this Part; the written closure plan, required by Section 811.110 and 35 Ill. Adm. Code 812.114; and the cost of postclosure care and plans required by this Part and the written postclosure care plans required by 35 Ill. Adm. Code 812.115. The cost estimate is the total cost for closure and postclosure care.

b) The owner or operator shall revise the cost estimate whenever a change in the closure plan or postclosure care plan increases the cost estimate.

c) The cost estimate must be based on the steps necessary for the premature final closure of the facility on the assumed closure date.

d) The cost estimate must be based on the assumption that the Agency will

contract with a third party to implement the closure plan.

e) The cost estimate may not be reduced by allowance for the salvage value of equipment or waste, for the resale value of land, or for the sale of landfill gas.

f) The cost estimate must, at a minimum, include all costs for all activities necessary to close the facility in accordance with all requirements of this Part.

g) Except for a MSWLF unit, the postclosure monitoring and maintenance cost estimate must be prepared:

1) On the basis of the design period for each unit at a facility, assuming operations will cease on the assumed closure date; and

2) Reduced to present value, as follows:

A) Based on a 4 percent discount rate;

B) Without allowing for inflation;

C) Over a period including the time remaining until the assumed closure date, plus the postclosure care period;

h) The postclosure care cost estimate must, at a minimum, be based on the following elements in the postclosure care plan:

1) Groundwater monitoring, based on the number of monitoring points and parameters and the frequency of sampling specified in the permit.

2) The annual Cost of Cover Placement and Stabilization, including an estimate of the annual residual settlement and erosion control and the cost of mowing.

3) Alternative Landfill Gas Disposal. If landfill gas is transported to an off-site processing system, then the owner or operator shall include in the cost estimate the costs necessary to operate an on-site gas disposal system, should access to the off-site facility become unavailable. The cost estimate must include the following information: installation, operation, maintenance and monitoring of an on-site gas disposal system.

4) Cost Estimates Beyond the Design Period. When a facility must extend the postclosure care period beyond the applicable design period, the cost estimate must be based upon such additional time and the care activities occurring during that time.

i) This Section does not authorize the Agency to require the owner or operator to perform any of the indicated activities upon which cost estimates are to be based; however, if the site permit requires a closure activity, the owner or operator shall include the cost of that activity in the cost estimate.

j) Once the owner or operator has completed an activity, the owner or operator may file an application for significant permit modification pursuant to 35 Ill. Adm. Code 813.201 indicating that the activity has been completed, and zeroing that element of the cost estimate.

k) Cost estimate for corrective action at MSWLF units.

1) An owner or operator of a MSWLF unit required to undertake a corrective action program pursuant to Section 811.326 shall have a detailed written estimate, in current dollars, of the cost of hiring a third party to perform the corrective action in accordance with the Section 811.326. The corrective action cost estimate must account for the total costs of corrective action activities as described in the corrective action plan for the entire corrective action period. The owner or operator shall notify the Agency that the estimate has been placed in the operating record.

2) The owner or operator must annually adjust the estimate for inflation until the corrective action program is completed in accordance with Section 811.326(f).

3) The owner or operator must increase the corrective action cost estimate and the amount of financial assurance provided under paragraph (b) of this section is changes in the corrective action program or MSWLF unit conditions increase the maximum costs of corrective action.

4) The owner or operator may reduce the amount of the corrective action cost estimate and the amount of financial assurance provided pursuant to subsections (k)(5) and (k)(6) of this section if the cost estimate exceeds the maximum remaining costs of corrective action. The owner or operator shall notify the Agency that the justification for the reduction of the corrective action cost estimate and the amount of financial assurance has been placed in the operating record.

5) The owner or operator of each MSWLF unit required to undertake a corrective action program under Section 811.326 shall establish, in accordance with Section 811.706, financial assurance for the most recent corrective action program.

6) The owner or operator shall provide continuous coverage for corrective action until released from the financial assurance requirements for corrective action by demonstrating compliance with Section 811.326 (f) and (g).

BOARD NOTE: Subsection (k) is derived from 40 CFR 258.73 (1992).

Section 811.705 Revision of Cost Estimate

a) The owner or operator shall revise the current cost estimates for closure and postclosure care in each new application for permit renewal or where a facility modification results in an increase of the cost estimate.

b) The owner or operator shall review the closure and postclosure care plans prior to filing a revised cost estimate in order to determine whether they are consistent with current operations, and the requirements of this Subchapter. The owner or operator shall either certify that the plans are consistent, or shall file an application incorporating new plans pursuant to 35 Ill. Adm. Code 813.

c) The owner or operator shall prepare new closure and postclosure cost

estimates reflecting current prices for the items included in the estimates when submitting any new application for permit renewal. The owner or operator shall file revised estimates even if the owner or operator determines that there are no changes in the prices.

d) The owner or operator of a MSWLF unit shall adjust the cost estimates of closure, postclosure, and corrective action for inflation on an annual basis during the following time period:

1) The active life of the unit for closure;

2) The active life and postclosure care period, for postclosure; or

3) Until the corrective action program is completed in accordance with Section 811.326, for corrective action.

BOARD NOTE: Subsection (d) is derived from 40 CFR 258.71(a)(2) (1992).

Section 811.706 Mechanisms for Financial Assurance

a) The owner or operator of a waste disposal site may utilize any of the mechanisms listed in subsections (a)(1) through (a)(6) to provide financial assurance for closure and postclosure care, and for corrective action at a MSWLF unit. An owner or operator of a MSWLF unit shall also meet the requirements of subsections (b), (c) and (d). The mechanisms are as follows:

1) A trust Fund (Section 811.710);

2) A surety Bond Guaranteeing Payment (Section 811.711);

3) A surety Bond Guaranteeing Performance (Section 811.712);

4) A letter of Credit (Section 811.713);

5) Closure Insurance (Section 811.714); or

6) Self-insurance (Section 811.715).

b) The owner or operator of a MSWLF unit shall ensure that the language of the mechanisms listed in subsection (a), when used for providing financial assurance for closure, postclosure, and corrective action, satisfies the following:

1) The amount of funds assured is sufficient to cover the costs of closure, post-closure care, and corrective action; and

2) The funds will be available in a timely fashion when needed.

3) The financial assurance mechanisms shall be legally valid, binding, and enforceable under state and federal law.

c) The owner or operator of a MSWLF unit shall provide financial assurance utilizing one or more of the mechanisms listed in subsection (a) within the following dates:

1) By April 9, 1995 (the effective date of these requirements) or prior to the initial receipt of solid waste, whichever is later, in the case of closure and post-closure care; or

2) No later than 120 days after the remedy has been selected in accordance with the requirements of Section 811.325, in the case of corrective action.

d) The owner or operator shall provide continuous coverage until the owner or operator is released from the financial assurance requirements pursuant to 35 Ill. Adm. Code 813.403(b) or Section 811.326.

BOARD NOTE: Subsections (b) and (c) are derived from 40 CFR 258.74(l) (1992).

Section 811.707 Use of Multiple Financial Mechanisms

An owner or operator may satisfy the requirements of this Subpart by establishing more than one financial mechanism per site. These mechanisms are limited to trust funds, surety bonds guaranteeing payment, letters of credit and insurance. The mechanisms must be as specified in 35 Ill. Adm. Code 811.710, 811.711, 811.713 and 811.714, respectively, except that it is the combination of mechanisms, rather than the single mechanism, which must provide financial assurance for an amount at least equal to the current cost estimate. The owner or operator may use any or all of the mechanisms to provide for closure and postclosure care of the site or corrective action.

Section 811.708 Use of a Financial Mechanism for Multiple Sites

An owner or operator may use a financial assurance mechanism specified in this Subpart to meet the requirements of this Subpart for more than one site. Evidence of financial assurance submitted to the Agency must include a list showing, for each site, the name, address and the amount of funds assured by the mechanism. The amount of funds available through the mechanism must be no less than the sum of funds that would be available if a separate mechanism had been established and maintained for each site. The amount of funds available to the Agency must be sufficient to close and provide postclosure care for all of the owner or operator's sites. In directing funds available through a single mechanism for the closure and postclosure care of any single site covered by that mechanism, the Agency shall direct only that amount of funds designated for that site, unless the owner or operator agrees to the use of additional funds available under that mechanism.

Section 811.709 Trust Fund for Unrelated Sites

Any person may establish a trust fund for the benefit of the Agency which may receive funds from more than one owner or operator for closure of different sites. Such a trust fund must operate like the trust fund specified in 35 Ill. Adm. Code 807.710, except as follows:

a) The trustee shall maintain a separate account for each site and shall evaluate such annually as of the day of creation of the trust;

b) The trustee shall annually notify each owner or operator and the Agency of the evaluation of each owner or operator's account;

c) The trustee shall release excess funds as required from the account for each site;

d) The trustee shall reimburse the owner or operator or other person authorized to perform closure or postclosure care only from the account for that site.

e) The Agency may direct the trustee to withhold payments only from the account for the site for which it has determined the cost of closure and postclosure care will be greater than the value of the account for that site pursuant to Section 811.710(g)(3).

Section 811.710 Trust Fund

a) An owner or operator may satisfy the requirements of this Subpart by establishing a trust fund which conforms to the requirements of this Section and submitting an original signed duplicate of the trust agreement to the Agency.

b) The trustee shall be an entity which has the authority to act as a trustee and:

1) Whose trust operations are examined by the Illinois Commissioner of Banks and Trust Companies pursuant to the Illinois Banking Act (Ill. Rev. Stat. 1991, ch. 17, pars. 301 et seq. [205 ILCS 5/1 et seq.]); or

2) Who complies with the Corporate Fiduciary Act (Ill. Rev. Stat. 1989, ch. 17, pars. 1551-1 et seq. [205 ILCS 620/1-1 et seq.]).

c) The trust agreement must be on the forms specified in Appendix A, Illustration A, and the trust agreement must be accompanied by a formal certification of acknowledgment, on the form specified in Appendix A, Illustration B.

d) Payments into the trust:

1) For closure and post closure care:

A) The owner or operator shall make a payment into the trust fund each year during the pay-in period.

B) The pay-in period is the number of years remaining until the assumed closure date.

C) Annual payments are determined by the following formula:

Annual payment = (CE-CV)/Y

where:

CE = Current cost estimate
CV = Current value of the trust fund
Y = Number of years remaining in the pay in period.

D) The owner or operator shall make the first annual payment prior to the initial receipt of waste for disposal. The owner or operator shall also, prior to such initial receipt of waste, submit to the Agency a receipt from the trustee for the first annual payment.

E) Subsequent annual payments must be made no later than 30 days after each anniversary of the first payment.

F) The owner or operator may accelerate payments into the trust fund, or may deposit the full amount of the current cost

estimate at the time the fund is established.

G) An owner or operator required to provide additional financial assurance for an increase in the cost estimate because of an amendment to this Subchapter may provide such additional financial assurance pursuant to this subsection. The owner or operator may provide the increase by contributing to a new or existing trust fund pursuant to this Section. Subsection (d)(2) notwithstanding, the pay-in period for such additional financial assurance shall be not less than three years.

2) For corrective action at MSWLF units:

A) The owner or operator shall make payments into the trust fund annually over one-half of the estimated length of the corrective action program in the case of corrective action for known releases. This period is referred to as the pay-in period.

B) The owner or operator shall make the first payment into the trust fund equal to at least one-half of the current cost estimate for corrective action divided by the number of years in the corrective action pay-in period, as defined in subsection (d)(2)(A) of this section. The amount of subsequent payments must be determined by the following formula:

Next payment = (RB-CV)/Y

where:

RB = Most recent estimate of the required trust fund balance for corrective action (i.e., the total costs that will be incurred during the second half of the corrective action period);
CV = Current value of the trust fund; and
Y = Number of years remaining in the pay-in period.

C) The owner or operator shall make the initial payment into the trust fund no later than 120 days after the remedy has been selected in accordance with the requirements of Section 811.325.

BOARD NOTE: Changes to subsection (d) and derived from 40 CFR 258.74 (a)(2), (a)(4), and (a)(5) (1992).

e) The trustee shall evaluate the trust fund annually, as of the day the trust was created or on such earlier date as may be provided in the agreement. The trustee shall notify the owner or operator and the Agency of the value within 30 days after the evaluation date.

f) If the owner or operator of a MSWLF unit establishes a trust fund after having used one or more alternative mechanisms specified in this Subpart, the initial payment into the trust fund must be at least the amount that the fund would contain if the trust fund were established initially and annual payments made according to the specifications of this Section.

BOARD NOTE: Subsection (f) is derived from 40 CFR 258.74 (a)(6) (1992).

g) Release of excess funds:

1) If the value of the financial assurance is greater than the total amount of the current cost estimate, the owner or operator may submit a written request to the Agency for a release of the amount in excess of the current cost estimate.

2) Within 60 days after receiving a request from the owner or operator for a release of funds, the Agency shall instruct the trustee to the owner or operator such funds as the Agency specifies in writing to be in excess of the current cost estimate.

h) Reimbursement for closure, postclosure care and corrective action expenses:

1) After initiating closure or corrective action, an owner or operator, or any other person authorized to perform closure or postclosure care or corrective action, may request reimbursement for closure or postclosure care or corrective action expenditures, by submitting itemized bills to the Agency.

2) Within 60 days after receiving the itemized bills for closure or postclosure care activities or corrective action, the Agency shall determine whether the expenditures are in accordance with the closure or postclosure care or corrective action plan. The Agency shall instruct the trustee to make reimbursement in such amounts as the Agency specifies in writing as expenditures in accordance with the closure or postclosure care or corrective action plan.

3) If the Agency determines, based on such information as is available to it, that the cost of closure and postclosure care or corrective action will be greater than the value of the trust fund, it shall withhold reimbursement of such amounts as it determines are necessary to preserve the fund in order to accomplish closure and postclosure care or corrective action until it determines that the owner or operator is no longer required to maintain financial assurance for closure and postclosure care or corrective action. In the event the fund is inadequate to pay all claims, the Agency shall pay claims according to the following priorities:

A) Persons with whom the Agency has contracted to perform closure or postclosure care or correction action activities (first priority);

B) Persons who have completed closure or postclosure care or corrective action authorized by the Agency (second priority);

C) Persons who have completed work which furthered the closure or postclosure care or corrective action (third priority);

D) The owner or operator and related business entities (last priority).

Section 811.711 Surety Bond Guaranteeing Payment

a) An owner or operator may satisfy the requirements of this Subpart by obtaining a surety bond which conforms to the requirements of this Section and submitting the bond to the Agency. A surety bond obtained by an owner or operator of a MSWLF unit must be effective before the

initial receipt of waste or before April 9, 1995 (the effective date of the financial assurance requirements under RCRA Subtitle D regulations), whichever is later, in the case of closure and post-closure care, or no later than 120 days after the remedy has been selected in accordance with the requirements of Section 811.325.

b) The surety company issuing the bond shall be licensed by the Illinois Department of Insurance pursuant to the Illinois Insurance Code (Ill. Rev. Stat. 1991, ch. 73, pars. 613 et seq. [215 ILCS 5/1 et seq.]) and approved by the U.S. Department of the Treasury as an acceptable surety.

BOARD NOTE: The U.S. Department of the Treasury lists acceptable sureties in its Circular 570.

c) The surety bond must be on the forms specified in Appendix A, Illustration C, D or H.

d) Any payments made under the bond will be placed in the landfill closure and postclosure fund within the State Treasury.

e) Conditions:

1) The bond must guarantee that the owner or operator will provide closure and postclosure care in accordance with the approved closure and postclosure care plans. If the facility is a MSWLF unit, then the corrective action bond must guarantee that the owner or operator will implement corrective action in accordance with Section 811.326.

2) The surety will become liable on the bond obligation when, during the term of the bond, the owner or operator fails to perform as guaranteed by the bond. The owner or operator fails to perform when the owner or operator:

A) Abandons the site;

B) Is adjudicated bankrupt;

C) Fails to initiate closure of the site or postclosure care or corrective action when ordered to do so by the Board pursuant to Title VII of the Act, or when ordered to do so by a court of competent jurisdiction;

D) Notifies the Agency that it has initiated closure or corrective action, or initiates closure or corrective action, but fails to close the site or provide postclosure care or corrective action in accordance with the closure and postclosure care or corrective action plans; or

E) For a corrective action bond, fails to implement corrective action at a MSWLF unit in accordance with Section 811.326.

f) Penal sum:

1) The penal sum of the bond must be in an amount at least equal to the current cost estimate.

2) The Agency shall approve a reduction in the penal sum whenever the current cost estimate decreases.

g) Term:

1) The bond must be issued for a term of at least five years and must not be cancelable during that term.

2) If the owner or operator fails to provide substitute financial assurance prior to expiration of a bond, the term of the bond must be automatically extended for one twelve-month period starting with the date of expiration of the bond. During such extension the bond will cease to serve as financial assurance satisfying the requirements of this Part, and will not excuse the owner or operator from the duty to provide substitute financial assurance.

3) The Agency shall release the surety if, after the surety becomes liable on the bond, the owner or operator or another person provides financial assurance for closure and postclosure care of the site or corrective action at a MSWLF unit, unless the Agency determines that the closure or postclosure care plan, corrective action program at a MSWLF unit, or the amount of substituted financial assurance is inadequate to provide closure and postclosure care or implement corrective action in compliance with this Part.

h) Cure of default and refunds:

1) The Agency shall release the surety if, after the surety becomes liable on the bond, the owner or operator or another person provides financial assurance for closure and postclosure care of the site or corrective action at a MSWLF unit, unless the Agency determines that the closure or postclosure care plan, corrective action program at a MSWLF unit, or the amount of substituted financial assurance is inadequate to provide closure and postclosure care or implement corrective action in compliance with this Part.

2) After closure and postclosure care have been completed in accordance with the plans and requirements of this Part or after the completion of corrective action at a MSWLF unit in accordance with Section 811.326, the Agency shall refund any unspent money which was paid into the "Landfill Closure and Postclosure Fund" by the surety.

BOARD NOTE: Corrective action language at subsection (a) is derived from 40 CFR 258.74(b)(1) (1992). The other clarifying changes reflect the inclusion of financial assurance requirements for implementing corrective action at MSWLF units under this Section.

Section 811.712 Surety Bond Guaranteeing Performance

a) An owner or operator may satisfy the requirements of this Subpart by obtaining a surety bond which conforms to the requirements of this Section and submitting the bond to the Agency. A surety bond obtained by an owner or operator of a MSWLF unit must be effective before the initial receipt of waste or before April 9, 1995 (the effective date of the financial assurance requirements under RCRA Subtitle D regulations), whichever is later, in the case of closure and post-closure care, or no later than 120 days after the remedy has been selected in accordance with the requirements of Section 811.325.

b) The surety company issuing the bond shall be licensed by the Illinois Department of Insurance pursuant to the Illinois Insurance Code. (Ill. Rev. Stat. 1991, ch. 73, pars. 613 et seq. [215 ILCS 5/1 et seq.]) and approved by the U.S. Department of the Treasury as an acceptable surety.

BOARD NOTE: The U.S. Department of the Treasury lists acceptable sureties in its Circular 570.

c) The surety bond must be on the forms as specified in Appendix A, Illustration C, D or H.

d) Any payments made under the bond will be placed in the landfill closure and postclosure fund within the State Treasury.

e) Conditions:

1) The bond must guarantee that the operator will provide closure and postclosure care in accordance with the closure and postclosure care plans in the permit. If the facility is a MSWLF unit, then a corrective action bond must guarantee that the owner or operator will implement corrective action in accordance with Section 811.326. The surety shall have the option of providing closure and postclosure care or carrying out corrective action, or of paying the penal sum.

2) The surety will become liable on the bond obligation when, during the term of the bond, the owner or operator fails to perform as guaranteed by the bond. The owner or operator fails to perform when the owner or operator:

A) Abandons the site;

B) Is adjudicated bankrupt;

C) Fails to initiate closure of the site or postclosure care or corrective action when ordered to do so by the Board pursuant to Title VII of the Act, or when ordered to do so by a court of competent jurisdiction; or

D) Notifies the Agency that it has initiated closure or corrective action, or initiates closure or corrective action, but fails to close the site or provide postclosure care or corrective action in accordance with the closure and postclosure care or corrective action plans.

E) For a corrective action bond, fails to implement corrective action at a MSWLF unit in accordance with Section 811.326.

f) Penal sum:

1) The penal sum of the bond must be in an amount at least equal to the current cost estimate.

2) The Agency shall approve a reduction in the penal sum whenever the current cost estimate decreases.

g) Term:

1) The bond must be issued for a term of at least five years and must not be cancelable during that term.

2) If the owner or operator fails to provide substitute financial assurance prior to expiration of a bond, the term of the bond must be automatically extended for one twelve-month period starting with the date of expiration of the bond. During such extension, the bond will cease to serve as financial assurance satisfying the requirements of this Part, and will not excuse the owner or operator from the duty to provide substitute financial assurance.

h) Cure of default and refunds:

1) The Agency shall release the surety if, after the surety becomes liable on the bond, the owner or operator or another person provides financial assurance for closure and postclosure care of the site or corrective action at a MSWLF unit, unless the Agency determines that the closure or postclosure care plan, corrective action at a MSWLF unit, or the amount of substituted financial assurance is inadequate to provide closure and postclosure care or implement corrective action at a MSWLF unit in compliance with this Part.

2) After closure and postclosure care have been completed in accordance with the closure and postclosure care plans and the requirements of this Part or after the completion of corrective action at a MSWLF unit in accordance with Section 811.326, the Agency shall refund any unspent money which was paid into the "Landfill Closure and Postclosure Fund" by the surety.

i) The surety will not be liable for deficiencies in the performance of closure by the owner or operator after the Agency releases the owner or operator from the requirements of this Subpart.

BOARD NOTE: MSWLF corrective action language at subsection (a) is derived from 40 CFR 258.74 (b)(1) (1992). The other clarifying changes reflect the inclusion of financial assurance requirements for implementing corrective action at MSWLF units under this Section.

Section 811.713 Letter of Credit

a) An owner or operator may satisfy the requirements of this Subpart by obtaining an irrevocable standby letter of credit which conforms to the requirements of this Section and submitting the letter to the Agency. A letter of credit obtained by an owner or operator of a MSWLF unit must be effective before the initial receipt of waste or before April 9, 1995 (the effective date of the financial assurance requirements under RCRA Subtitle D regulations), whichever is later, in the case of closure and post-closure care, or no later than 120 days after the remedy has been selected in accordance with the requirements of Section 811.325.

b) The issuing institution shall be an entity which has the authority to issue letters of credit and:

1) Whose letter-of-credit operations are regulated by the Illinois Commissioner of Banks and Trust Companies pursuant to the Illinois Banking Act (Ill. Rev. Stat. 1991, ch. 17, pars. 301 et seq. [205 ILCS 5/1 et seq.]); or,

2) Whose deposits are insured by the Federal Deposit Insurance Corporation or the Federal Savings and Loan Insurance Corporation.

c) Forms:

1) The letter of credit must be on the forms specified in Appendix A, Illustration E.

2) The letter of credit must be accompanied by a letter from the owner or operator, referring to the letter of credit by number, the name and address of the issuing institution, and the effective date of the letter, and providing the following information: the name and address of the site and the amount of funds assured for closure and postclosure care of the site, or for corrective action at a MSWLF unit by the letter of credit.

d) Any amounts drawn by the Agency pursuant to the letter of credit will be deposited in the landfill closure and postclosure fund within the State Treasury.

e) Conditions on which the Agency may draw on the letter of credit:

1) The Agency shall draw on the letter of credit if the owner or operator fails to perform closure or postclosure care in accordance with the closure and postclosure care plans, or fails to implement corrective action at a MSWLF unit in accordance with Section 811.326.

2) The Agency shall draw on the letter of credit when the owner or operator:

A) Abandons the site;

B) Is adjudicated bankrupt;

C) Fails to initiate closure of the site or postclosure care or corrective action when ordered to do so by the Board pursuant to Title VII of the Act, or when ordered to do so by a court of competent jurisdiction; or

D) Notifies the Agency that it has initiated closure or corrective action, or initiates closure or corrective action, but fails to provide closure and postclosure care or corrective action in accordance with the closure and postclosure care or corrective action plans.

f) Amount:

1) The letter of credit must be issued in an amount at least equal to the current cost estimate.

2) The Agency shall approve a reduction in the amount whenever the current cost estimate decreases.

g) Term:

1) The letter of credit must be issued for a term of at least five years and must be irrevocable during that term.

2) If the owner or operator fails to substitute alternative financial assurance prior to expiration of a letter of credit, the term of the letter of credit must be automatically extended for one twelve-month period starting with the date of expiration. During such extension, the letter of credit will cease to serve as financial assurance satisfying the requirements of this Part, and will not excuse the owner or operator from the duty to provide substitute financial assurance.

h) Cure of default and refunds:

1) The Agency shall release the financial institution if, after the Agency is allowed to draw on the letter of credit, the owner or operator or another person provides financial assurance for closure and postclosure care of the site or corrective action at a MSWLF unit, unless the Agency determines that a plan or the amount of substituted financial assurance is inadequate to provide closure and postclosure care, or implement corrective action at a MSWLF unit, as required by this Part.

2) After closure and postclosure care have been completed in accordance with the closure and postclosure care plans and the requirements of this Part or after the completion of corrective action at a MSWLF unit in accordance with Section 811.326, the Agency shall refund any unspent money which was paid into the "Landfill Closure and Postclosure Fund" by the financial institution.

BOARD NOTE: MSWLF corrective action language at subsection (a) is derived from 40 CFR 258.74 (c)(1) (1992). The other clarifying changes reflect the inclusion of financial assurance requirements for implementing corrective action at MSWLF units under this Section.

Section 811.714 Closure Insurance

a) An owner or operator may satisfy the requirements of this Subpart by obtaining closure and postclosure care insurance which conforms to the requirements of this Section and submitting an executed duplicate original of such insurance policy to the Agency.

b) The insurer shall be licensed to transact the business of insurance by the Illinois Department of Insurance pursuant to the Illinois Insurance Code (Ill. Rev. Stat. 1991, ch. 73, pars. 613 et seq. [215 ILCS 5/1 et seq]).

c) The policy must be on forms approved by the Illinois Department of Insurance pursuant to the Illinois Insurance Code.

d) Face amount:

1) The closure and postclosure care insurance policy must be issued for a face amount at least equal to the current cost estimate. The term "face amount" means the total amount the insurer is obligated to pay under the policy. Actual payments by the insurer will not change the face amount, although the insurer's future liability will be lowered by the amount of the payments.

2) The Agency shall approve a reduction in the amount of the policy whenever the current cost estimate decreases.

e) The closure and postclosure care insurance policy must guarantee that funds will be available to close the site and to provide postclosure care thereafter. The policy must also guarantee that, once closure begins, the insurer will be responsible for paying out funds, up to an amount equal to the face amount of the policy, upon the direction of the Agency to such party or parties as the Agency specifies. The insurer will be liable when:

1) The owner or operator abandons the site;

2) The owner or operator is adjudicated bankrupt;

3) The Board, pursuant to Title VIII of the Act, or a court of competent jurisdiction orders the site closed;

4) The owner or operator notifies the Agency that it is initiating closure; or

5) Any person initiates closure with approval of the Agency.

f) Reimbursement for closure and postclosure care expenses:

1) After initiating closure, an owner or operator or any other person authorized to perform closure or postclosure care may request reimbursement for closure and postclosure care expenditures by submitting itemized bills to the Agency.

2) Within 60 days after receiving bills for closure or postclosure care activities, the Agency shall determine whether the expenditures are in accordance with the closure or postclosure care plan. The Agency shall direct the insurer to make reimbursement in such amounts as the Agency specifies in writing as expenditures in accordance with the closure and postclosure care plans.

3) If the Agency determines based on such information as is available to it that the cost of closure and postclosure care will be greater than the face amount of the policy, it shall withhold reimbursement of such amounts as it deems prudent until it determines that the owner or operator is no longer required to maintain financial assurance. In the event the face amount of the policy is inadequate to pay all claims, the Agency shall pay claims according to the following priorities:

A) Persons with whom the Agency has contracted to perform closure or postclosure care activities (first priority);

B) Persons who have completed closure or postclosure care authorized by the Agency (second priority);

C) Persons who have completed work which furthered the closure or postclosure care (third priority);

D) The owner or operator and related business entities (last priority).

g) Cancellation:

1) The owner or operator shall maintain the policy in full force and

effect until the Agency releases the insurer pursuant to Section 811.702.

2) The policy must provide that the insurer may not cancel, terminate or fail to renew the policy, except for failure to pay the premium. The automatic renewal of the policy must, at a minimum, provide the insured with the option of renewal at the face amount of the expiring policy. If there is a failure to pay the premium, the insurer may elect to cancel, terminate or fail to renew the policy by sending notice by certified mail to the owner or operator and the Agency. Cancellation, termination or failure to renew may not occur, however, during the 120 days beginning with the date of receipt of the notice by both the Agency and the owner or operator, as evidenced by the return receipts. Cancellation, termination or failure to renew may not occur and the policy will remain in full force and effect in the event that on or before the date of expiration the premium due is paid.

h) Each policy must contain a provision allowing assignment of the policy to a successor owner or operator. Such assignment may be conditional upon consent of the insurer, provided such consent is not unreasonably refused.

Section 811.715 Self-Insurance for Non-commercial Sites

a) Definitions. The following definitions are intended to assist in the understanding of this Part and are not intended to limit the meanings of terms in any way that conflicts with generally accepted accounting principles:

"Assets" means all existing and all probable future economic benefits obtained or controlled by a particular entity.

"Current assets" means cash or other assets or resources commonly identified as those which are reasonably expected to be realized in cash or sold or consumed during the normal operating cycle of the business.

"Current liabilities" means obligations whose liquidation is reasonably expected to require the use of existing resources properly classifiable as current assets or the creation of other current liabilities.

"Generally accepted accounting principles" means Auditing Standards--Current Text, incorporated by reference at 35 Ill. Adm Code 810.104.

"Gross Revenue" means total receipts less returns and allowances.

"Independently audited" refers to an audit performed by an independent certified public accountant in accordance with generally accepted auditing standards.

"Liabilities" means probable future sacrifices of economic benefits arising from present obligations to transfer assets or provide services to other entities in the future as a result of past transactions or events.

"Net working capital" means current assets minus current liabilities.

"Net worth" means total assets minus total liabilities and is equivalent to owner's equity.

"Tangible net worth" means tangible assets less liabilities; tangible assets do not include intangibles such as goodwill and rights to patents or royalties.

b) Information to be Filed

An owner or operator may satisfy the financial assurance requirements of this Part by providing the following:

1) Bond without surety promising to pay the cost estimate (subsection (c)).

2) Proof that the owner or operator meets the gross revenue test (subsection (d)).

3) Proof that the owner or operator meets the financial test (subsection (e)).

c) Bond Without Surety. An owner or operator utilizing self-insurance shall provide a bond without surety on the forms specified in Appendix A, Illustration G. The owner or operator shall promise to pay the current cost estimate to the Agency unless the owner or operator provides closure and postclosure care in accordance with the closure and postclosure care plans.

d) Gross Revenue Test. The owner or operator shall demonstrate that less than one-half of its gross revenues are derived from waste disposal operations. Revenue is "from waste disposal operations" if it would stop upon cessation of the owner or operator's waste disposal operations.

e) Financial Test

1) To pass the financial test, the owner or operator shall meet the criteria of either subsection (e)(1)(A) or (e)(1)(B):

A) The owner or operator shall have:

i) Two of the following three ratios: a ratio of total liabilities to net worth of less than 2.0; a ratio of the sum of net income plus depreciation, depletion and amortization to total liabilities of greater than 0.1; or a ratio of current assets to current liabilities of greater than 1.5; and
ii) Net working capital and tangible net worth each at least six times the current cost estimate; and
iii) Tangible net worth of at least $10 million; and
iv) Assets in the United States amounting to at least 90 percent of the owner or operator's total assets and at least six times the current cost estimate.

B) The owner or operator shall have:

i) A current rating of AAA, AA, A or BBB for its most recent bond issuance as issued by Standard and Poor, or a rating of Aaa, Aa, A or Baa, as issued by Moody; and
ii) Tangible net worth at least six times the current cost estimate; and

iii) Tangible net worth of at least $10 million; and
iv) Assets located in the United States amounting to at least 90 percent of its total assets or at least six times the current cost estimate.

2) To demonstrate that it meets this test, the owner or operator shall submit the following items to the Agency:

A) A letter signed by the owner or operator's chief financial officer and worded as specified in Appendix A, Illustration I; and
B) A copy of the independent certified public accountant's report on examination of the owner or operator's financial statements for the latest completed fiscal year; and
C) A special report from the owner or operator's independent certified public accountant to the owner or operator stating that:

i) The accountant has compared the data which the letter from the chief financial officer specifies as having been derived from the independently audited, year-end financial statements for the latest fiscal year with the amounts in such financial statements; and
ii) In connection with that procedure, no matters came to the accountant's attention which caused the accountant to believe that the specified data should be adjusted.

f) Updated Information.

1) After the initial submission of items specified in subsections (d) and (e), the owner or operator shall send updated information to the Agency within 90 days after the close of each succeeding fiscal year.

2) If the owner or operator no longer meets the requirements of subsections (d) and (e), the owner or operator shall send notice to the Agency of intent to establish alternative financial assurance. The notice must be sent by certified mail within 90 days after the end of the fiscal year for which the year-end financial data show that the owner or operator no longer meets the requirements.

g) Qualified Opinions. If the opinion required by subsections (e)(2)(B) and (e)(2)(C) includes an adverse opinion or a disclaimer of opinion, the Agency shall disallow the use of self-insurance. If the opinion includes other qualifications, the Agency shall disallow the use of self-insurance if:

1) The qualifications relate to the numbers which are used in the gross revenue test or the financial test; and,

2) In light of the qualifications, the owner or operator has failed to demonstrate that it meets the gross revenue test or financial test.

h) Parent Corporation. An owner or operator may satisfy the financial assurance requirements of this Part by demonstrating that a corporation which owns an interest in the owner or operator meets the gross revenue and financial tests. The owner or operator shall also provide a bond with the parent as surety (Appendix A, Illustration H).

Section 811.Appendix A Financial Assurance Forms
Illustration A Trust Agreement

TRUST AGREEMENT

Trust Fund Number_____

Trust Agreement, the "Agreement," entered into as of the _____ day of _____, by and between _____ _____, a _____, the "Grantor," and _____, _____, the "Trustee."

Whereas, Section 21.1 of the Environmental Protection Act, "Act", prohibits any person from conducting any waste disposal operation unless such person has posted with the Illinois Environmental Protection Agency, "IEPA", a performance bond or other security for the purpose of insuring closure of the site and postclosure care or corrective action in accordance with the Act and Illinois Pollution Control Board, "IPCB", rules.

Whereas, the IPCB has established certain regulations applicable to the Grantor, requiring that an operator of a waste disposal site provide assurance that funds will be available when needed for closure and/or postclosure care or corrective action of the site.

Whereas, the Grantor has elected to establish a trust to provide all or part of such financial assurance for the sites identified in this agreement.

Whereas, the Grantor, acting through its duly authorized officers, has selected the Trustee to be the trustee under this agreement, and the Trustee is willing to act as trustee.

Whereas, Trustee is an entity which has authority to act as a trustee and whose trust operations are regulated by the Illinois Commissioner of Banks & Trust Companies or who complies with the Corporate Fiduciary Act (Ill. Rev. Stat. 1991, ch. 17, par. 1551-1 et seq. [205 ILCS 5/1]). (Line through any condition which does not apply.)

Now, Therefore, the Grantor and the Trustee agree as follows:

Section 1. Definitions. As used in this Agreement:

a) The term "Grantor" means the operator who enters into this Agreement and any successors or assigns of the operator.

b) The term "Trustee" means the Trustee who enters into this Agreement and any successor Trustee.

Section 2. Identification of Sites and Cost Estimates. This Agreement pertains to the sites and cost estimates identified on attached Schedule A (on Schedule A, list the name and address and initial cost estimate of each site for which financial assurance is demonstrated by this agreement).

Section 3. Establishment of Fund. The Grantor and the Trustee hereby establish a trust fund, the "Fund," for the benefit of the IEPA. The Grantor and the Trustee intend that no other third party have access to the Fund except as provided in this agreement. The Fund is established initially as consisting of the property, which is acceptable to the Trustee, described in Schedule B attached to this agreement. Such property and any other property

subsequently transferred to the Trustee is referred to as the Fund, together with all earnings and profits on the Fund, less any payments or distributions made by the Trustee pursuant to this agreement. The Fund shall be held by the Trustee, in trust, as provided in this agreement. The Trustee shall not be responsible nor shall it undertake any responsibility for the amount or adequacy of, nor any duty to collect from the Grantor, any payments necessary to discharge any liabilities of the Grantor.

Section 4. Payment for Closure and Postclosure Care or Corrective Action. The Trustee shall make payments from the Fund as the IEPA shall direct, in writing, to provide for the payment of the costs of closure and/or postclosure care or corrective action of the sites covered by this agreement. The Trustee shall reimburse the Grantor or other persons as specified by the IEPA from the Fund for closure and postclosure or corrective action expenditures in such amounts as the IEPA shall direct in writing. In addition, the Trustee shall refund to the Grantor such amounts as the IEPA specifies in writing. Upon refund, such funds shall no longer constitute part of the Fund.

Section 5. Payments Comprising the Fund. Payments made to the Trustee for the Fund shall consist of cash or securities acceptable to the Trustee.

Section 6. Trust Management. The Trustee shall invest and reinvest the principal and income of the Fund and keep the Fund invested as a single fund, without distinction between principal and income, in accordance with general investment policies and guidelines which the Grantor may communicate in writing to the Trustee from time to time, subject, however, to the provisions of this Section. In investing, reinvesting, exchanging, selling and managing the Fund, the Trustee shall discharge his duties with respect to the trust fund solely in the interest of the beneficiary and with the care, skill, prudence and diligence under the circumstances then prevailing which persons of prudence, acting in a like capacity and familiar with such matters, would use in the conduct of an enterprise of a like character and with like aims; except that:

a) Securities or other obligations of the Grantor, or any other owner or operator of the site, or any of their affiliates as defined in Section 80a-2(a) of the Investment Company Act of 1940, as amended (15 U.S.C. 80a-2(a)) shall not be acquired or held, unless they are securities or other obligations of the Federal government or the State of Illinois;

b) The Trustee is authorized to invest the Fund in time or demand deposits of the Trustee, to the extent insured by the Federal Deposit Insurance Corporation.

c) The Trustee is authorized to hold cash awaiting investment or distribution uninvested for a reasonable time and without liability for the payment of interest thereon.

Section 7. Commingling and Investment. The Trustee is expressly authorized in its discretion:

a) To transfer from time to time any or all of the assets of the Fund to any common, commingled or collective trust fund created by the Trustee in which the Fund is eligible to participate, subject to all of the provisions thereof, to be commingled with the assets of other trusts participating therein; and

b) To purchase shares in any investment company registered under the Investment Company Act of 1940 (15 U.S.C. 80a-1 et seq.) including one

which may be created, managed, underwritten or to which investment advice is rendered or the shares of which are sold by the Trustee. The Trustee may vote such shares in its discretion.

Section 8. Express Powers of Trustee. Without in any way limiting the powers and discretions conferred upon the Trustee by the other provisions of this agreement or by law, the Trustee is expressly authorized and empowered:

a) To sell, exchange, convey, transfer or otherwise dispose of any property held by it, by public or private sale. No person dealing with the Trustee shall be bound to see to the application of the purchase money or to inquire into the validity or expedience of any such sale or other disposition;

b) To make, execute, acknowledge and deliver any and all documents of transfer and conveyance and any and all other instruments that may be necessary or appropriate to carry out the powers granted in this agreement;

c) To register any securities held in the Fund in its own name or in the name of a nominee and to hold any security in bearer form or in book entry, or to combine certificates representing such securities with certificates of the same issue held by the Trustee in other fiduciary capacities, or to deposit or arrange for the deposit of such securities in a qualified central depositary even though, when so deposited, such securities may be merged and held in bulk in the name of the nominee of such depositary with other securities deposited therein by another person, or to deposit or arrange for the deposit of any securities issued by the United States Government, or any agency or instrumentality thereof, with a Federal Reserve Bank, but the books and records of the Trustee shall at all times show that all such securities are part of the Fund.

d) To deposit any cash in the Fund in interest-bearing accounts maintained or savings certificates issued by the Trustee, in its separate corporate capacity, or in any other banking institution affiliated with the Trustee, to the extent insured by the Federal Deposit Insurance Corporation; and

e) To compromise or otherwise adjust all claims in favor of or against the Fund.

Section 9. Taxes and Expenses. All taxes of any kind that may be assessed or levied against or in respect of the Fund and all brokerage commissions incurred by the Fund shall be paid from the Fund. All other expenses incurred by the Trustee, to the extent not paid directly by the Grantor, and all other proper charges and disbursements of the Trustee shall be paid from the Fund.

Section 10. Annual Valuation. The Trustee shall annually furnish to the Grantor and to the IEPA a statement confirming the value of the Trust. The evaluation day shall be each year on the _____ day of _____. Any securities in the Fund shall valued at market value as of the evaluation day. The Trustee shall mail the evaluation statement to the Grantor and the IEPA within 30 days after the evaluation day. The failure of the Grantor to object in writing to the Trustee within 90 days after the statement has been furnished to the Grantor and the IEPA shall constitute a conclusively binding assent by the Grantor, barring the Grantor from asserting any claim or liability against the Trustee with respect to matters disclosed in the statement.

Section 11. Advice of counsel. The Trustee may from time to time consult with counsel, who may be counsel to the Grantor, with respect to any question arising as to the construction of this agreement or any action to be taken hereunder. The Trustee shall be fully protected, to the extent permitted by law, in acting upon the advice of counsel.

Section 12. Trustee Compensation. The Trustee shall be entitled to reasonable compensation for its services as agreed upon in writing from time to time with the Grantor.

Section 13. Successor Trustee. The Trustee may resign or the Grantor may replace the Trustee, but such resignation or replacement shall not be effective until the Grantor has appointed a successor trustee and the successor accepts the appointment. The successor trustee shall have the same powers and duties as those conferred upon the Trustee hereunder. Upon the successor trustee's acceptance of the appointment, the Trustee shall assign, transfer and pay over to the successor trustee the funds and properties then constituting the Fund. If for any reason the Grantor cannot or does not act in the event of the resignation of the Trustee, the Trustee may apply to a court of competent jurisdiction for the appointment of a successor trustee or for instructions. The successor trustee shall specify the date on which it assumes administration of the trust in a writing sent to the Grantor, the IEPA and the present Trustee by certified mail ten days before such change becomes effective. Any expenses incurred by the Trustee as a result of any of the acts contemplated by this Section shall be paid as provided in Section 9.

Section 14. Instructions to the Trustee. All orders, requests and instructions by the Grantor to the Trustee shall be in writing, signed by such persons as are designated in the attached Exhibit A or such other designees as the Grantor may designate by amendment to Exhibit A. The Trustee shall be fully protected in acting without inquiry in accordance with the Grantor's orders, requests and instructions. All orders, requests and instructions by the IEPA to the Trustee shall be in writing, signed by the IEPA Director or his designees, and the Trustee shall act and shall be fully protected in acting in accordance with such orders, requests and instructions. The Trustee shall have the right to assume, in the absence of written notice to the contrary, that no event constituting a change or a termination of the authority of any person to act on behalf of the Grantor or IEPA hereunder has occurred. The Trustee shall have no duty to act in the absence of such orders, requests and instructions from the Grantor and/or IEPA, except as provided in this agreement.

Section 15. Notice of Nonpayment. The Trustee shall notify the Grantor and the IEPA, by certified mail within ten days following the expiration of the 30-day period after the anniversary of the establishment of the Trust, if no payment is received from the Grantor during that period. After the pay-in period is completed, the Trustee shall not be required to send a notice of nonpayment.

Section 16. Amendment of Agreement. This Agreement may be amended by an instrument in writing executed by the Grantor, the Trustee and the IEPA Director, or by the Trustee and the IEPA Director if the Grantor ceases to exist.

Section 17. Irrevocability and Termination. Subject to the right of the parties to amend this Agreement as provided in Section 16, this Trust shall be irrevocable and shall continue until terminated at the written agreement of the Grantor, the Trustee and the IEPA Director, or by the Trustee and the

IEPA, if the Grantor ceases to exist. Upon termination of the Trust, all remaining trust property, less final trust administration expenses, shall be delivered to the Grantor.

Section 18. Immunity and Indemnification. The Trustee shall not incur personal liability of any nature in connection with any act or omission, made in good faith, in the administration of this Trust, or in carrying out any directions by the Grantor or the IEPA Director issued in accordance with this Agreement. The Trustee shall be indemnified and saved harmless by the Grantor or from the Trust Fund, or both, from and against any personal liability to which the Trustee may be subjected by reason of any act or conduct in its official capacity, including all expenses reasonably incurred in its defense in the event the Grantor fails to provide such defense.

Section 19. Choice of Law. This Agreement shall be administered, construed and enforced according to the laws of the State of Illinois.

Section 20. Interpretation. As used in this Agreement, words in the singular include the plural and words in the plural include the singular. The descriptive headings for each Section of this Agreement shall not affect the interpretation or the legal efficacy of this Agreement.

In Witness Whereof the parties have caused this Agreement to be executed by their respective officers duly authorized and their corporate seals to be hereunto affixed and attested as of the date first above written.

Attest: Signature of Grantor_____

Typed Name_____

Title_____

Seal

Attest: Signature of Trustee_____

Typed Name_____

Title_____

Seal

Section 811.Appendix A Financial Assurance Forms
Illustration B Certificate of Acknowledgment

CERTIFICATE OF ACKNOWLEDGMENT

State of _____)
) SS
County of_____)

On this _____ day of _____, _____ before me personally came _____ (operator) to me known, who, being by me duly sworn, did depose and say that she/he resides at _____

(address), that she/he is _____ (title) of _____ (corporation), the corporation described in and which executed the above instrument; that she/he knows the seal of said corporation; that the seal affixed to such instrument is such corporate seal; that it was so affixed by order of the Board of Directors of said corporation, and that she/he signed her/his name thereto by like order.

_____Notary Public

My Commission Expires _____

Section 811.Appendix A Financial Assurance Forms
Illustration C Forfeiture Bond

FORFEITURE BOND

Date bond executed: _____

Effective date: _____

Principal: _____

Type of organization: _____

State of incorporation: _____

Surety: _____

Sites:

Name _____

Address _____

City _____

Amount guaranteed by this bond: $ _____

Name _____

Address _____

City _____

Amount guaranteed by this bond: $ _____

Please attach a separate page if more space is needed for all sites.

Total penal sum of bond: $ _____

Surety's bond number: _____

The Principal and the Surety promise to pay the Illinois Environmental Protection Agency ("IEPA") the above penal sum unless the Principal provides closure and postclosure care or corrective action for each site in accordance with the closure and postclosure care or corrective action plans for that site. To the payment of this obligation the Principal and Surety jointly and

severally bind themselves, their heirs, executors, administrators, successors and assigns.

Whereas the Principal is required, under Section 21(d) of the Environmental Protection Act (Ill. Rev. Stat. 1991, ch. 111 1/2, par. 1021(d)) [415 ILCS 5/21(d)] to have a permit to conduct a waste disposal operation;

Whereas the Principal is required, under Section 21.1 of the Environmental Protection Act to provide financial assurance for closure and postclosure care or corrective action; and

Whereas the Surety is licensed by the Illinois Department of Insurance;

Whereas the Principal and Surety agree that this bond shall be governed by the laws of the State of Illinois;

The Surety shall pay the penal sum to the IEPA if, during the term of the bond, the Principal fails to provide closure and postclosure care or corrective action for any site in accordance with the closure and postclosure care or corrective action plans for that site as guaranteed by this bond. The Principal fails to so provide when the Principal:

a) Abandons the site;

b) Is adjudicated bankrupt;

c) Fails to initiate closure of the site or postclosure care or corrective action when ordered to do so by the Board or a court of competent jurisdiction;

d) Notifies the Agency that it has initiated closure, or initiates closure, but fails to close the site or provide postclosure care or corrective action in accordance with the closure and postclosure care or corrective action plans; or

e) For corrective action, fails to implement corrective action at a municipal solid waste landfill unit in accordance with 35 Ill. Adm. Code 811.326.

The Surety shall pay the penal sum of the bond to the IEPA within 30 days after the IEPA mails notice to the Surety that the Principal has failed to so provide closure and postclosure care or corrective action. Payment shall be made by check or draft payable to the State of Illinois, Landfill Closure and Postclosure Fund.

The liability of the Surety shall not be discharged by any payment or succession of payments unless and until such payment or payments shall amount in the aggregate to the penal sum of the bond. In no event shall the obligation of the Surety exceed the amount of the penal sum.

This bond shall expire on the _____ day of _____, _____; provided, however, that if the Principal fails to provide substitute financial assurance prior to the expiration date, and the IEPA mails notice of such failure to the Surety within 30 days after such date, the term of this bond shall be automatically extended for one twelve-month period starting with the date of expiration of the bond.

The Principal may terminate this bond by sending written notice to the Surety; provided, however, that no such notice shall become effective until the Surety

receives written authorization for termination of the bond from the IEPA.

In Witness Whereof, the Principal and Surety have executed this Forfeiture Bond and have affixed their seals on the date set forth above.

The persons whose signatures appear below certify that they are authorized to execute this surety bond on behalf of the Principal and Surety.

PRINCIPAL

Signature Name _____

Typed Name _____

Address _____

Title _____

State of Incorporation _____

Date _____

Corporate seal

CORPORATE SURETY

Signature _____

Typed Name _____

Title _____

Corporate seal

Bond premium: $ _____

Section 811.Appendix A Financial Assurance Forms
Illustration D Performance Bond

PERFORMANCE BOND

Date bond executed: _____

Effective date: _____

Principal: _____

Type of organization: _____

State of incorporation: _____

Surety: _____

Sites:

Name _____

Address _____

City _____

Amount guaranteed by this bond: $ _____

Name _____

Address _____

City _____

Amount guaranteed by this bond: $ _____

Please attach a separate page if more space is needed for all sites.

Total penal sum of bond: $ _____

Surety's bond number: _____

The Principal and the Surety promise to pay the Illinois Environmental Protection Agency ("IEPA") the above penal sum unless the Principal or Surety provides closure and postclosure care or corrective action for each site in accordance with the closure and postclosure care or corrective action plans for that site. To the payment of this obligation the Principal and Surety jointly and severally bind themselves, their heirs, executors, administrators, successors and assigns.

Whereas the Principal is required, under Section 21(d) of the Environmental Protection Act (Ill. Rev. Stat. 1991, ch. 111 1/2, par. 1021(d) [415 ILCS 5/21(d)]) to have a permit to conduct a waste disposal operation;

Whereas the Principal is required, under Section 21.1 of the Environmental Protection Act, to provide financial assurance for closure and postclosure care; or corrective action and

Whereas the Surety is licensed by the Illinois Department of Insurance;

Whereas the Principal and Surety agree that this bond shall be governed by the laws of the State of Illinois;

The Surety shall pay the penal sum to the IEPA or provide closure and postclosure care or corrective action in accordance with the closure and postclosure care or corrective action plans for the site if, during the term of the bond, the Principal fails to provide closure and postclosure care or corrective action for any site in accordance with the closure and postclosure care or corrective action plans for that site as guaranteed by this bond. The Principal fails to so provide when the Principal:

a) Abandons the site;

b) Is adjudicated bankrupt;

c) Fails to initiate closure of the site or postclosure care or corrective action when ordered to do so by the Board or a court of competent jurisdiction;

d) Notifies the Agency that it has initiated closure, or initiates closure, but fails to close the site or provide postclosure care or corrective

action in accordance with the closure and postclosure care or corrective action plans; or

The Surety shall pay the penal sum of the bond to the IEPA or notify the IEPA that it intends to provide closure and postclosure care or corrective action in accordance with the closure and postclosure care or corrective action plans for the site within 30 days after the IEPA mails notice to the Surety that the Principal has failed to so provide closure and postclosure care or corrective action. Payment shall be made by check or draft payable to the State of Illinois, Landfill Closure and Postclosure Fund.

If the Surety notifies the Agency that it intends to provide closure and postclosure care or corrective action, then the Surety must initiate closure and postclosure care or corrective action within 60 days after the IEPA mailed notice to the Surety that the Principal failed to provide closure and postclosure care or corrective action. The Surety must complete closure and postclosure care or corrective action in accordance with the closure and postclosure care or corrective action plans, or pay the penal sum.

The liability of the Surety shall not be discharged by any payment or succession of payments unless and until such payment or payments shall amount in the aggregate to the penal sum of the bond. In no event shall the obligation of the Surety exceed the amount of the penal sum.

This bond shall expire on the _____ day of _____, _____; provided, however, that if the Principal fails to provide substitute financial assurance prior to the expiration date, and the IEPA mails notice of such failure to the Surety within 30 days after such date, the term of this bond shall be automatically extended for one twelve-month period starting with the date of expiration of the bond.

The Principal may terminate this bond by sending written notice to the Surety; provided, however, that no such notice shall become effective until the Surety receives written authorization for termination of the bond from the IEPA.

In Witness Whereof, the Principal and Surety have executed this Forfeiture Bond and have affixed their seals on the date set forth above.

The persons whose signatures appear below certify that they are authorized to execute this surety bond on behalf of the Principal and Surety.

PRINCIPAL

Signature Name _____

Typed Name _____

Address _____

Title _____

State of Incorporation _____

Date _____

Corporate seal

CORPORATE SURETY

Signature _____

Typed Name _____

Title _____

Corporate seal

Bond premium: $ _____

Section 811.Appendix A Financial Assurance Forms
Illustration E Irrevocable Standby Letter of Credit

IRREVOCABLE STANDBY LETTER OF CREDIT

Director
Illinois Environmental Protection Agency
2200 Churchill Road
Springfield, Illinois 62706

Dear Sir or Madam:

We have authority to issue letters of credit. Our letter-of-credit operations are regulated by the Illinois Commissioner of Banks and Trusts or our deposits are insured by the Federal Deposit Insurance Corporation. (Omit language which does not apply)

We hereby establish our Irrevocable Standby Letter of Credit No. _____ in your favor, at the request and for the account of _____ up to the aggregate amount of _____ U. S. dollars ($ _____), available upon presentation of

1. your sight draft, bearing reference to this letter of credit No. _____; and,

2. your signed statement reading as follows: "I certify that the amount of the draft is payable pursuant to regulations issued under authority of the Environmental Protection Act (Ill. Rev. Stat. 1991, ch. 111 1/2, par. 1001 et seq. [415 ILCS 5/1 et seq.]) and 35 Ill. Adm. Code 811.713(e).

This letter of credit is effective as of _____ and shall expire on _____; but, such expiration date shall be automatically extended for one period of twelve months starting with the expiration date if the operator fails to substitute alternative financial assurance prior to the expiration of this letter of credit and you notify us of such failure within 30 days after the above expiration date.

Whenever this letter of credit is drawn on under and in compliance with the terms of this credit, we shall duly honor such draft upon presentation to us, and we shall deposit the amount of the draft directly into the State of Illinois Landfill Closure and Postclosure or Corrective Action Fund in accordance with your instructions.

This letter of credit is governed by the Uniform Commercial Code (Ill. Rev. Stat. 1991, ch. 26, pars. 1-101 et seq. [810 ILCS 5/1-101 et seq.]).

Signature _____

Typed Name _____

Title _____

Date _____

Name and address of issuing institution _____

_____

This credit is subject to _____

_____

Section 811.Appendix A Financial Assurance Forms
Illustration F Certificate of Insurance for Closure and/or Postclosure Care

CERTIFICATE OF INSURANCE FOR CLOSURE AND/OR POSTCLOSURE CARE

Name and Address of Insurer ("Insurer"): _____

_____

Name and Address of Insured ("Insured"): _____

_____

Sites Covered:

Name _____

Address _____

City _____

Amount insured for this site:$ _____

Name _____

Address _____

City _____

Amount insured for this site:$ _____

Please attach a separate page if more space is needed for all sites.

Face Amount _____

Policy Number _____

Effective Date _____

The Insurer hereby certifies that it is licensed to transact the business of insurance by the Illinois Department of Insurance.

The insurer hereby certifies that it has issued to the Insured the policy of insurance identified above to provide financial assurance for closure and postclosure care for the sites identified above. The Insurer further warrants that such policy conforms in all respects with the requirements of 35 Ill. Adm. Code 811.714, as applicable and as such regulations were constituted on the date shown immediately below. It is agreed that any provision of the policy inconsistent with such regulations is hereby amended to eliminate such inconsistency.

Name (Authorized signature for Insurer)_____

Typed Name _____

Title _____

Date _____

Section 811.Appendix A Financial Assurance Forms
Illustration G Operator's Bond Without Surety

OPERATOR'S BOND WITHOUT SURETY

Date bond executed: _____

Effective date: _____

Operator: _____

Operator's address: _____

_____

Site: _____

Site address: _____

_____

Penal sum: $ _____

The operator promises to pay the penal sum to the Illinois Environmental Protection Agency unless the Operator provides closure and postclosure care of the site in accordance with the closure and postclosure care plans for the site.

Operator _____

Signature _____

Typed Name _____

Title _____

Date _____

Corporate seal

Section 811.Appendix A Financial Assurance Forms
Illustration H Operator's Bond With Parent Surety

OPERATOR'S BOND WITH PARENT SURETY

Date bond executed: _____

Effective Date: _____

Surety: _____

Surety's address: _____

Operator: _____

Operator's address: _____

Site: _____

Site address: _____

Penal sum: $ _____

The Operator and Surety promise to pay the above penal sum to the Illinois Environmental Protection Agency ("IEPA") unless the Operator provides closure and postclosure care of the site in accordance with the closure and postclosure care plans for the site. To the payment of this obligation the Operator and Surety jointly and severally bind themselves, their heirs, executors, administrators, successors and assigns.

Whereas the Operator is required under the Environmental Protection Act (Ill. Rev. Stat. 1989, ch. 111 1/2, par. 1021(d)) to have a permit to conduct a waste disposal operation; and

Whereas the Operator is required under Section 21.1 of the Environmental Protection Act to provide financial assurance for closure and postclosure care; and

Whereas the Operator and Surety agree that this bond shall be governed by the laws of the State of Illinois; and

Whereas the Surety is a corporation which owns an interest in the Operator;

The Surety shall pay the penal sum to the IEPA if, during the term of the bond, the Operator fails to provide closure and postclosure care for any site in accordance with the closure and postclosure care plans for that site as guaranteed by this bond. The Operator fails to so provide when the Operator:

a) Abandons the site;

b) Is adjudicated bankrupt;

c) Fails to initiate closure of the site or postclosure care when ordered to do so by the Board or a court of competent jurisdiction; or

d) Notifies the Agency that it has initiated closure, or initiates closure, but fails to close the site or provide postclosure care in accordance with the closure and postclosure care plans.

The Surety shall pay the penal sum of the bond to the IEPA within 30 days after the IEPA mails notice to the Surety that the Operator has failed to so provide closure and postclosure care. Payment shall be made by check or draft payable to the State of Illinois, Landfill Closure and Postclosure Fund.

In Witness Whereof, the Operator and Surety have executed this bond and have affixed their seals on the date set forth above.

The persons whose signatures appear below certify that they are authorized to execute this surety bond on behalf of the Operator and Surety.

Operator _____

Surety _____

Signature _____

Name _____

Typed Name _____

Address _____

Title _____

State of Incorporation _____

Date _____

Signature _____

Typed Name _____

Title _____

Corporate seal Corporate seal

Section 811.Appendix A Financial Assurance Forms
Illustration I Letter From Chief Financial Officer

LETTER FROM CHIEF FINANCIAL OFFICER

Director
Illinois Environmental Protection Agency
2200 Churchill Road
Springfield, Illinois 62706

Dear Sir or Madam:

I am the chief financial officer of _____.

This letter is in support of this firm's use of the gross revenue test and financial test to demonstrate financial assurance pursuant to 35 Ill. Adm. Code 811.715.

This letter is to demonstrate financial assurance for the following sites:

Operator: _____

Name: _____

Address: _____

City: _____

Current cost estimate: $ _____

Operator: _____

Name: _____

Address: _____

City: _____

Current cost estimate: $ _____

Please attach a separate page if more space is needed for all facilities.

Attached is an Operator's Bond without Surety or an Operator's Bond with Parent Surety for the current cost estimate for each site. (Strike inapplicable language.)

Gross Revenue Test

1. Gross revenue of the firm $ _____

2. Gross revenue from waste disposal operations $ _____

3. Line 2 divided by line 3 _____

Financial Test
Alternative I

1. Sum of current cost estimates (total of all cost estimates shown in paragraphs above) $ _____

2. Total liabilities (if any portion of the cost estimates is included in total liabilities, you may deduct the amount of that portion from this line and add that amount to lines 3 and 4) $ _____

3. Tangible net worth $ _____

4. Net worth $ _____

5. Current assets $ _____

6. Current liabilities $ _____

7. Net working capital (line 5 minus line 6) $ _____

8. The sum of net income plus depreciation, depletion, and amortization $ _____

9. Total assets in U.S. (required only if less than 90 percent of firm's assets are located in the U.S. $ _____

| | Yes | No |
|---|---|---|
| 10. Is line 3 at least $10 million? | _____ | |
| 11. Is line 3 at least 6 times line 1? | _____ | |
| 12. Is line 7 at least 6 times line 1? | _____ | |
| 13. Are at least 90 percent of firm's assets located in the U.S.? If not, complete line 14. | _____ | |
| 14. Is line 9 at least 6 times line 1? | _____ | |
| 15. Is line 2 divided by line 4 less than 2.0? | _____ | |
| 16. Is line 8 divided by line 2 greater than 0.1? | _____ | |
| 17. Is line 5 divided by line 6 greater than 1.5? | _____ | |

Signature _____

Typed Name _____

Title _____

Date _____

Financial Test
Alternative II

1. Sum of current cost estimates (total of all cost estimates shown in paragraphs above) $ _____

2. Current bond rating of most recent issuance of this firm and name of rating service _____

3. Date of issuance of bond _____

4. Date of maturity of bond _____

5. Tangible net worth (if any portion of the closure and postclosure cost estimates is included in "total liabilities" on your firm's financial statements, you may add the amount of that portion to this line) $ _____

6. Total assets in U.S. (required only if less than 90 percent of firm's assets are located in the U.S.) $ _____

| | Yes | No |
|---|---|---|
| 7. Is line 5 at least $10 million? | _____ | |
| 8. Is line 5 at least 6 times line 1? | _____ | |
| 9. Are at least 90 percent of firm's assets located in the U.S.? If not complete line 10. | _____ | |

10. Is line 6 at least 6 times line 1? _____

Signature _____

Typed name _____

Title _____

Date _____

Section 811.Appendix B Section-by-Section Correlation Between the Standards of the RCRA Subtitle D MSWLF Regulations and the Board's Nonhazardous Waste Landfill Regulations

| RCRA SUBTITLE D REGULATIONS | |
|---|---|
| I. SUBPART A: General | |
| 1) Purpose, Scope, and Applicability (40 CFR 258.1) | 1) NL[1]: Sections 811.101, 811.301, 811.401, 811.501, and 811.700. EL[2]: Section 814.101. |
| 2) Definitions (40 CFR 258.2) | 2) Section 810.103. |
| II. SUBPART B: Location Restrictions | |
| 1) Airport safety (40 CFR 258.10) | 1) NL: Section 811.302(e): Section 814.302(c) and 814.402(c). |
| 2) Floodplains. (40 CFR 258.11) | 2) NL: Section 811.102(b). EL: Section 814.302 and 814.402. |
| 3) Wetlands. (40 CFR 258.12) | 3) NL: Sections 811.102(d), 811.102(e) and 811.103. EL: Section 814.302 and 814.402. |
| 4) Fault areas. (40 CFR 258.13) | 4-5) NL: Sections 811.304 and 811.305. EL: Section 814.302 and 814.402. |
| 5) Seismic impact zones. (40 CFR 258.14) | |
| 6) Unstable areas. (40 CFR 258.15) | 6) NL: Sections 811.304 and 811.305. EL: Section 811.302(c) and 811.402(c). |
| 7) Closure of existing MSWL units. (40 CFR 258.16) | 7) EL: Sections 814.301 and 814.401. |
| III. SUBPART C: Operating Criteria | |
| 1) Procedures for excluding the receipt of hazardous waste. (40 CFR 258.20) | 1) NL: Section 811.323. EL: Sections 814.302 and 814.402. |
| 2) Cover material requirements. (40 CFR 258.21) | 2) NL: Section 811.106. EL: Sections 814.302 and 814.402. |

1 - NL: New Landfill; 2 - EL: Existing Landfill and Lateral Expansions.

| | | |
|---|---|---|
| 3) | Disease vector control. (40 CFR 258.22) | 3) NL: Section 811.107(i). EL: Sections 814.302 and 814.402 |
| 4) | Explosive gas control. (40 CFR 258.23) | 4) NL: Sections 811.310, 811.311 and 811.312. EL: Sections 814.302 and 814.402. |
| 5) | Air criteria. (40 CFR 258.24) | 5) NL: Sections 811.107(b), 811.310, and 811.311. EL: Sections 814.302 and 814.402. |
| 6) | Access requirements. (40 CFR 258.25) | 6) NL: Section 811.109. EL: Sections 814.302 and 814.402. |
| 7) | Run-on/run-off control system. (40 CFR 258.26) | 7) NL: Section 811.103. EL: Sections 814.302 and 814.402. |
| 8) | Surface water requirements. (40 CFR 258.27) | 8) Same as above. |
| 9) | Liquids restrictions. (40 CFR 258.28) | 9) NL: Section 811.107(m). EL: Sections 814.302 and 814.402. |
| 10) | Recordkeeping requirements. (40 CFR 258.29) | 10) NL: Sections 811.112, and Parts 812 and 813. EL: Sections 814.302 and 814.402. |
| IV. | SUBPART D: Design criteria (40 CFR 258.40) | IV) NL: 811.303, 811.304, 811.305, 811.306, 811.307, 811.308, 811.309, 811.315, 811.316, 811.317, and 811.Subpart E. EL: Sections 814.302 and 814.402. |
| V. | SUBPART E: Groundwater Monitoring and Corrective Action | |
| 1) | Applicability. | 1) NL: 35 Section 811.319(a)(1). EL: Sections 814.302 and 814.402. |
| 2) | Groundwater monitoring systems. (40 CFR 258.51) | 2) NL: Sections 811.318 and 811.320(d). EL: Sections 814.302 and 814.402. |
| 3) | Groundwater sampling and analysis. (40 CFR 258.53) | 3) NL: Section 811.318(e), 811.320(d), 811.320(e). EL: Sections 814.302 and 814.402. |
| 4) | Detection monitoring program. (40 CFR 258.54) | 4) NL: Section 811.319(a). EL: Sections 814.302 and 814.402. |
| 5) | Assessment monitoring program. (40 CFR 258.55) | 5) NL: Section 811.319(b). EL: Sections 814.302 and 814.402. |
| 6) | Assessment of corrective measures. (40 CFR 258.56) | 6) NL: Sections 811.319(d) and 811.324. EL: Sections 814.302 and 814.402. |
| 7) | Selection of remedy. (40 CFR 258.57) | 7) NL: Sections 811.319(d) and 811.325. EL: Sections 814.302 and 814.402. |
| 8) | Implementation of the corrective action program. (40 CFR 258.58) | 8) NL: Sections 811.319(d) and 811.325. EL: Sections 814.302 and 814.402. |

| | | |
|---|---|---|
| VI. | SUBPART F: Closure and Post-Closure Care | |
| 1) | Closure criteria. (40 CFR 258.60) | 1) NL: Sections 811.110, 811.315 and 811.322. EL: Sections 814.302 and 814.402. |
| 2) | Post-closure care requirements. (40 CFR 258.61) | 2) NL: Sections 811.111. EL: Sections 814.302 and 814.402. |
| VII. | SUBPART G: Financial Assurance Criteria | |
| 1) | Applicability and effective date. (40 CFR 258.70) | 1) NL: Section 811.700. EL Sections 814.302 and 814.402. |
| 2) | Financial assurance for closure. (40 CFR 258.71) | 2), 3) and 4) NL: Sections 811.701 through 811.705. EL: Sections 814.302 and 814.402. |
| 3) | Financial assurance for post-closure. (40 CFR 258.72) | |
| 4) | Financial assurance for corrective action. (40 CFR 258.73) | |
| 5) | Allowable mechanisms. (40 CFR 258.73) | 5) NL: Section 811.706 through 811.715. EL: Sections 814.302 and 814.402. |

TITLE 35: ENVIRONMENTAL PROTECTION

SUBTITLE G: WASTE DISPOSAL

CHAPTER I: POLLUTION CONTROL BOARD

SUBCHAPTER i: SOLID WASTE AND SPECIAL WASTE HAULING

# PART 812
# INFORMATION TO BE SUBMITTED IN A PERMIT APPLICATION

## SUBPART A: GENERAL INFORMATION REQUIRED FOR ALL LANDFILLS

Section
812.101 Scope and Applicability
812.102 Certification by Professional Engineer
812.103 Application Fees
812.104 Required Signatures
812.105 Approval by Unit of Local Government
812.106 Site Location Map
812.107 Site Plan Map
812.108 Narrative Description of the Facility
812.109 Location Standards
812.110 Surface Water Control
812.111 Daily Cover
812.112 Legal Description
812.113 Proof of Property Ownership and Certification
812.114 Closure Plans
812.115 Postclosure Care Plans
812.116 Closure and Postclosure Cost Estimates

## SUBPART B: ADDITIONAL INFORMATION REQUIRED FOR INERT WASTE LANDFILLS

Section
812.201 Scope and Applicability
812.202 Waste Stream Test Results
812.203 Final Cover
812.204 Closure Requirements

## SUBPART C: ADDITIONAL INFORMATION REQUIRED FOR PUTRESCIBLE AND CHEMICAL WASTE LANDFILLS

Section
812.301 Scope and Applicability
812.302 Waste Analysis
812.303 Site Location
812.304 Waste Shredding
812.305 Foundation Analysis and Design
812.306 Design of the Liner System
812.307 Leachate Drainage and Collection Systems
812.308 Leachate Management System
812.309 Landfill Gas Monitoring Systems
812.310 Gas Collection Systems
812.311 Landfill Gas Disposal
812.312 Intermediate Cover
812.313 Design of the Final Cover System
812.314 Description of the Hydrogeology
812.315 Plugging and Sealing of Drill Holes
812.316 Results of the Groundwater Impact Assessment
812.317 Groundwater Monitoring Program
812.318 Operating Plans

AUTHORITY: Implementing Sections 5, 21, 21.1, 22, 22.17 and 28.1, and authorized by Section 27 of the Environmental Protection Act (Ill. Rev. Stat. 1989, ch. 111 1/2, pars. 1005, 1021, 1021.1, 1022, 1022.17, 1028.1 and 1027).

SOURCE: Adopted in R88-7 at 14 Ill. Reg. 15785, effective September 18, 1990.

NOTE: Capitalization indicates statutory language.

## SUBPART A: GENERAL INFORMATION REQUIRED FOR ALL LANDFILLS

### Section 812.101 Scope and Applicability

a) All persons, except those specifically exempted by Section 21(d) of the Environmental Protection Act (Act) (Ill. Rev. Stat. 1989, ch. 111 1/2, par. 1021(d)), shall submit to the Agency an application for a permit to develop and operate a landfill. The application must contain the information required by this Subpart and by Section 39(a) of the Act.

b) Subpart A contains general standards applicable to all landfills. Subpart B contains additional standards applicable to landfills which accept only inert waste. Subpart C contains additional standards applicable to landfills which accept chemical and putrescible waste.

c) All general provisions of 35 Ill. Adm. Code 810 apply to this Part.

### Section 812.102 Certification by Professional Engineer

All designs shall be prepared by, or under the supervision of, a professional engineer. The professional engineer shall affix the name of the engineer, date of preparation, registration number, a statement attesting to the accuracy of the information and design, and a professional seal to all designs.

### Section 812.103 Application Fees

The permit application must be accompanied by all filing fees required pursuant to Section 5(f) of the Act.

### Section 812.104 Required Signatures

a) All permit applications shall contain the name, address, and telephone number of a duly authorized agent of the operator and the property owner to whom all inquiries and correspondence shall be addressed.

b) All permit applications shall be signed by a duly authorized agent of the operator and the property owner, shall be accompanied by an oath or affidavit attesting to the agent's authority to sign the application and shall be notarized. The following persons are considered duly authorized agents of the operator and the property owner:

1) For Corporations, a principal executive officer of at least the level of vice president;

2) For a sole proprietorship or partnership, a proprietor or general partner, respectively; and

3) For a municipality, state, federal or other public agency, by the head of the agency or ranking elected official.

### Section 812.105 Approval by Unit of Local Government

The applicant shall state whether the facility is a new regional pollution control facility, as defined in Section 3.32 of the Act, which is subject to the site location suitability approval requirements of Sections 39(c) and 39.2 of the Act. If such approval by a unit of local government is required, the application shall identify the unit of local government with jurisdiction. The application shall contain any approval issued by that unit of local government. If no approval has been granted, the application shall describe the status of the approval request.

**Section 812.106 Site Location Map**

All permit applications shall contain a site location map on the most recent United States Geological Survey (USGS) quadrangle of the area from the 7 1/2 minute series (topographic), or on such other map whose scale clearly shows the following information:

a) The permit area and all adjacent property, extending at least 1000 meters (3300 feet) beyond the boundary of the facility;

b) All surface waters;

c) The prevailing wind direction;

d) All rivers designated for protection under the Wild and Scenic Rivers Act (16 U.S.C. 1271 et seq.);

e) The limits of all 100-year floodplains;

f) All natural areas designated as a Dedicated Illinois Nature Preserve pursuant to the Illinois Natural Areas Preservation Act (Ill. Rev. Stat. 1989, ch. 105, par. 701 et seq.);

g) All historic and archaeological sites designated by the National Historic Preservation Act (16 U.S.C. 470 et seq.) and the Illinois Historic Preservation Act (Ill. Rev. Stat. 1989 ch. 127, par. 133dl et seq.);

h) All areas identified as critical habitat pursuant to the Endangered Species Act (16 U.S.C. 1531 et seq.) and the Illinois Endangered Species Protection Act (Ill. Rev. Stat. 1989, ch. 8, par. 331 et seq.); and

i) All main service corridors, transportation routes, and access roads to the facility.

**Section 812.107 Site Plan Map**

The application shall contain maps, including cross sectional maps of the site boundaries, showing the location of the facility on a scale no smaller than one inch equals 200 feet containing a two-foot contour interval. The following information shall be shown:

a) The entire permit area;

b) The boundaries, both above and below ground level, of the facility and all units included in the facility;

c) Location of borrow areas;

d) Boundaries of all areas to be disturbed;

e) The proposed phasing of the facility, including a delineation of the approximate area to be disturbed each year and areas expected to be closed each year in compliance with 35 Ill. Adm. Code 811.107(a);

f) All roads in and around the facility;

g) Devices for controlling access to the facility;

h) Devices for controlling litter;

i) Fire protection facilities; and

j) Utilities.

**Section 812.108 Narrative Description of the Facility**

The permit application shall contain a written description of the facility with supporting documentation describing the procedures and plans that will be used at the facility to comply with the requirements of 35 Ill. Adm. Code 811 and any other applicable Parts of 35 Ill. Adm. Code: Chapter I. Such descriptions shall include, but not be limited to the following information:

a) The type of waste disposal uni and the types of wastes expected in each unit;

b) An estimate of the maximum capacity of each unit and the rate at which waste is to be placed;

c) The manner in which waste will be placed and compacted to comply with 35 Ill. Adm. Code 811.105;

d) The estimated unit weight of the waste;

e) The length of time each unit will receive waste;

f) The design period to be used for each unit;

g) Size of the open face area, including all information showing that slopes steeper than two to one will be stable and in compliance with 35 Ill. Adm. Code 811.107(b);

h) A description of how units will be developed to allow contemporaneous closure and stabilization pursuant to 35 Ill. Adm. Code 811.110, 811.111, 811.204, 811.205 or 811.322;

i) A description of all equipment to be used at the facility for complying with 35 Ill. Adm. Code 807.304;

j) A litter control plan for complying with 35 Ill. Adm. Code 811.107(k);

k) A salvaging plan including a description of all salvage facilities and a plan for complying with 35 Ill. Adm. Code 811.108;

l) A description of all utilities for operation in compliance with 35 Ill. Adm. Code 811.107(d);

m) A boundary control plan describing how the operator will comply the requirements of 35 Ill. Adm. Code 811.109;

n) A maintenance plan describing how the operator will comply with 35 Ill. Adm. Code 811.107(c) and (e);

o) An air quality plan describing the methods to be used to comply with the open burning requirements of 35 Ill. Adm. Code 811.107(f) and for controlling dust in compliance with 35 Ill. Adm. Code 811.107(g);

p) A noise control plan describing how the operator will control noise in compliance with 35 Ill. Adm. Code 811.107(h);

q) An odor control plan;

r) A vector control plan to comply with 35 Ill. Adm. Code 811.107(i);

s) A firefighting and fire safety plan; and

t) A transportation plan that includes all existing and planned roads in the facility that will be used during the operation of the landfill facility; the size and type of such roads and the frequency with which they will be used.

**Section 812.109 Location Standards**

The permit application shall contain:

a) Documentation that the facility will operate in compliance with 35 Ill. Adm. Code 811.102(a).

b) A floodplain determination containing:

1) Documentation that the facility is not located within the floodplain of the 100-year flood event; or

2) Documentation that the facility meets the requirements of 35 Ill. Adm. Code 811.102(b).

c) Documentation from the State Historic Preservation Officer that the facility will be in compliance with 35 Ill. Adm. Code 811.102(c).

d) Documentation from the Illinois Nature Preserves Commission that the facility will be in compliance with 811.102(c) as it relates to Dedicated Illinois Nature preserves.

e) Documentation that the facility will be in compliance with 35 Ill. Adm. Code 811.102(d).

f) Documentation that a facility located within a wetland is in compliance with Section 404 of the Clean Water Act (35 U.S.C. 1344).

g) Documentation that the facility is in compliance with 35 Ill. Adm. Code 811.102(f).

**Section 812.110 Surface Water Control**

The permit application shall contain a plan for controlling surface water which demonstrates compliance with 35 Ill. Adm. Code 811.103, and which shall include at least the following:

a) A copy of the approved National Pollutant Discharge Elimination System (NPDES) permit issued pursuant to 35 Ill. Adm. Code 309 or, if a permit is pending, a copy of the NPDES permit application to discharge runoff from all disturbed areas;

b) A map showing the location of all structures affected by the surface water runoff from disturbed areas on the facility;

c) Detailed designs of all structures to be constructed during development of the facility and during the first five year operating period; and

d) Estimated construction dates of all structures to be constructed beyond the first five year operating period.

**Section 812.111 Daily Cover**

The application shall contain a description of the material to be used as daily cover:

a) A description of the soil to be used, including its classification and approximate hydraulic conductivity; or

b) Documentation that any proposed alternative materials or procedures to substitute for daily cover meet the minimum requirements of 35 Ill. Adm. Code 811.106(b).

**Section 812.112 Legal Description**

The permit application shall contain a legal description of the facility boundary and the boundaries of all units included in the facility. This legal description shall identify the nature and location of all stakes and monuments required by Section 811.104 and shall be prepared by or under the supervision of a professional surveyor, who shall affix a professional seal to the work.

**Section 812.113 Proof of Property Ownership and Certification**

The permit application shall contain a certificate of ownership of the permit area or a copy of the lease. The lease shall clearly specify that the owner authorizes the construction of a waste disposal facility on the leased premises, and the duration of the lease will be at least as long as the design period of the landfill. Any prior conduct certifications issued to the owner or operator shall be included in the permit application. The owner and operator shall certify that the Agency will be notified within seven days of any changes in ownership or conditions in the lease affecting the permit area.

**Section 812.114 Closure Plans**

The permit application shall contain a written closure plan which contains, at a minimum, the following:

a) A map showing the configuration of the facility after closure of all units, with the following:

1) A contour map showing the proposed final topography (after placement of the final cover) of all disturbed areas on a 1" = 200' scale and a contour interval of two feet; and

2) The location of all facility-related structures to remain as permanent features after closure.

b) Steps necessary for the premature final closure of the site at the assumed closure date, as defined in 35 Ill. Adm. Code 811.700(e);

c) Steps necessary for the final closure of the site at the end of its intended operating life;

d) Steps necessary to prevent damage to the environment during temporary suspension of waste acceptance if the operator wants a permit which would allow temporary suspension of waste acceptance at the site without initiating final closure;

e) A description of the steps necessary to decontaminate equipment during closure;

f) An estimate of the expected year of closure;

g) Schedules for the premature and final closure, which shall include, at a minimum:

1) Total time required to close the site; and

2) Time required for closure activities which will allow tracking of the progress of closure; and

h) A description of methods for compliance with all closure requirements of 35 Ill. Adm. Code 811.

**Section 812.115 Postclosure Care Plans**

The application shall contain a postclosure care plan which includes a written description of the measures to be taken during

the postclosure care period in compliance with the requirements of 35 Ill. Adm. Code 811.

**Section 812.116 Closure and Postclosure Cost Estimates**

The application shall contain an estimate of the costs of closure and postclosure care and maintenance in accordance with the requirements of 35 Ill. Adm Code 811.Subpart G.

## SUBPART B: ADDITIONAL INFORMATION REQUIRED FOR INERT WASTE LANDFILLS

**Section 812.201 Scope and Applicability**

In addition to the information required by Subpart A, an application for a permit to develop an inert waste disposal unit shall contain the information required by this Subpart.

**Section 812.202 Waste Stream Test Results**

The application shall contain information describing the waste and results of tests conducted on the waste pursuant to 35 Ill. Adm. Code 811.202 demonstrating that all waste entering the unit meet the definition of an inert waste.

**Section 812.203 Final Cover**

The permit application shall contain a description of the material to be used as the final cover, application and spreading techniques, and the types of vegetation to be planted pursuant to 35 Ill. Adm. Code 811.204.

**Section 812.204 Closure Requirements**

The permit application shall contain a description of how the applicant will comply with 35 Ill. Adm. Code 811.205(a) and (b).

## SUBPART C: ADDITIONAL INFORMATION REQUIRED FOR PUTRESCIBLE AND CHEMICAL WASTE LANDFILLS

**Section 812.301 Scope and Applicability**

In addition to the information required by Subpart A, an application for a permit to develop a putrescible or chemical waste landfill shall contain the information required by this Subpart.

**Section 812.302 Waste Analysis**

An application for a landfill that accepts only chemical wastes shall include the results of a waste analysis showing that the wastes to be accepted at the facility meet the definition of a chemical waste. The analysis shall show that all wastes entering the unit will be compatible and will not react to form a hazardous substance or gaseous products.

**Section 812.303 Site Location**

a) The permit application shall contain a site location map showing the location of the following structures or areas located within one mile of the facility:

   1) All water supply wells in use for drinking water;

   2) All setback zones established pursuant to Section 14.2 or 14.3 of the Act;

   3) Any sole source aquifer, or that an impervious strata exists between the facility and the aquifer that meets the minimum requirements of 35 Ill. Adm. Code 811.302(b);

   4) Units located within a setback zone established pursuant to Section 14.2 or 14.3 of the Act showing that the location still meets the minimum requirements of 35 Ill. Adm. Code 811.302(b);

   5) All state and federal parks and recreational areas;

   6) All state, federal or interstate highways and the location of any barriers necessary to comply with 35 Ill. Adm. Code 811.302(c);

   7) All occupied dwellings, hospitals and schools; and

   8) All airports.

b) If any areas or structures included in a site location map, in accordance with subsection (a), requires a demonstration or showing, then documentation of the demonstration or showing must accompany the site location map.

**Section 812.304 Waste Shredding**

If waste shredding is planned for the facility operation, including the landfilling of shredded waste, then the application shall contain documentation to demonstrate compliance with 35 Ill. Adm Code 811.303(b), including a description of the mechanical shredder proposed for use.

**Section 812.305 Foundation Analysis and Design**

a) The permit application shall contain a foundation study and analysis showing that the unit demonstrates compliance with 35 Ill. Adm. Code 811.304 and 811.305.

b) The study shall be performed by or under the supervision of a registered professional engineer.

c) The following information shall be included in the permit application:

   1) Results of tests performed on foundation materials;

   2) Estimated settlement of the unit;

   3) Diagrams and cross sections of any proposed subbase or foundation construction;

   4) Specifications for soil to be used for foundation construction shall include, but not be limited to, soil classification, permeability, moisture content, moisture-density relationship, plasticity, and strength; and

   5) A construction quality assurance program for proper implementation of the foundation pursuant to 35 Ill. Adm. Code 811.Subpart E.

**Section 812.306 Design of the Liner System**

The application shall contain information to show that the design of the liner system meets the minimum requirements of 35 Ill. Adm. Code 811.306, including the following infomation:

a) For Compacted Clay Liners:

   1) Cross sections and plan views of the liner system;

   2) Results of any field or laboratory tests demonstrating that the liner material complies with 35 Ill. Adm. Code 811.306(d);

   3) A description of the test liner, including:

A) Diagrams and any supporting documentation showing that the test liner will be constructed and evaluated in accordance with 35 Ill. Adm. Code 811.507(a); or

B) A detailed description of the results of the test liner constructed in accordance with 35 Ill. Adm Code 811.507(a), if constructed prior to permit application;

4) A description of construction methods and equipment to be utilized; and

5) A construction quality assurance plan pursuant to 35 Ill. Adm. Code 811.Subpart E.

b) For geomembranes:

1) A description of the physical properties of the geomembrane;

2) Documentation showing that the design of the geomembrane meets the minimum requirements of 35 Ill. Adm. Code 811.306(e);

3) A description of the methods to seam the geomembrane in the field in compliance with 35 Ill. Adm. Code 811.306(e)(5);

4) A plan showing the proposed layout of the individual panels and the locations of all openings through the geomembrane;

5) A cross section and description of how openings in the membrane will be constructed to minimize leaks; and

6) A construction quality assurance program pursuant to 35 Ill. Adm. Code 811.Subpart E for proper construction, seaming and inspection of the geomembrane.

c) For Slurry Trenches and Cutoff Walls:

1) A description of the slurry trench or cutoff wall, including documentation of cross sections, material specifications and methods of construction to demonstrate compliance with 35 Ill. Adm. Code 811.306(f);

2) Location and descriptions of the boreholes, including the results of any testing; and

3) A construction quality assurance plan, pursuant to 35 Ill. Adm. Code 811.Subpart E.

d) For Alternative Liner Technology:

A complete description of the technology, including documentation demonstrating that the technology will perform as required by 35 Ill. Adm. Code 811.306(f).

**Section 812.307 Leachate Drainage and Collection Systems**

The permit application shall contain information to demonstrate that the proposed leachate drainage and collection system will be in compliance with 35 Ill. Adm. Code 811.307 and 811.308, including:

a) A plan view of the leachate collection system, showing pipe locations, cleanouts, manholes, sumps, leachate storage structures and other related information;

b) Cross sections and descriptions of manholes, sumps, cleanouts, connections and other appurtenances;

c) The locations of all leachate level monitoring locations;

d) A stability analysis showing that the side slopes will maintain the necessary static and seismic safety factors during all phases of operation;

e) All calculations, assumptions and information used to design the leachate collection and drainage system;

f) A description of the methods to be used to clean and otherwise maintain the leachate collection and drainage system, including the number and location of access and cleanout points; and

g) A construction quality assurance program to insure proper construction of the systems pursuant to 35 Ill. Adm. Code 811.Subpart E.

**Section 812.308 Leachate Management System**

a) The application shall contain information to show how the applicant will comply with 35 Ill. Adm. Code 811.309, including the following information:

1) Leachate disposal methods, including:

A) The approved NPDES permit or, if the permit is pending, the NPDES permit application;

B) Documentation to demonstrate that the off-site treatment works meets the requirements of 35 Ill. Adm. Code 811.309(e)(1); or

C) Pretreatment authorization, if necessary from the off-site publicly owned treatment works pursuant to 35 Ill. Adm. Code 310.

2) Design of tanks, lagoons, and all other treatment or storage units;

3) A map showing the location of all units, piping and monitoring stations; and

4) A description of the leachate monitoring system, including all parameters to be monitored and the location of the sampling points.

b) The operator may include in the application a request for authorization to recycle leachate, if desired. The request shall be supported by information to demonstrate compliance with 35 Ill. Adm. Code 811.309(f), including:

1) A demonstration that the unit satisfies the criteria of 35 Ill. Adm. Code 811.309(f)(1);

2) Estimates of the expected volume of excess leachate, as defined in 35 Ill. Adm. Code 811.309(f)(3);

3) A plan for the disposal of excess leachate, as defined in 35 Ill. Adm. Code 811.309(f)(3);

4) Layout and design of the leachate distribution system; and

5) Pursuant to 35 Ill. Adm. Code 811.309(f)(6), a demonstration that the daily and intermediate cover is permeable, or a plan to remove daily and intermediate cover prior to additional waste disposal.

**Section 812.309 Landfill Gas Monitoring Systems**

The permit application shall contain a plan to monitor the buildup and composition of landfill gas in compliance with 35 Ill. Adm. Code 811.310, including:

a) A description of the most likely paths of migration of landfill gas expected to be generated by the unit, supported by the results of any predictive modeling study of gas flow through the strata surrounding the facility used, pursuant to 35 Ill. Adm. Code 811.310(b)(2);

b) The location and design of sampling points; and

c) Support for the items under subsections (a) and (b) must be provided and shall include the results of the predictive modeling study of the gas flow in accordance with 35 Ill. Adm. Code 811.310(b)(3).

**Section 812.310 Gas Collection Systems**

The permit application shall contain, when a gas collection system is required pursuant to 35 Ill. Adm. Code 811.311(a), a plan for collecting landfill gas from the unit. The plan shall contain information to demonstrate compliance with 35 Ill. Adm. Code 811.311, including:

a) Location of the collection points;

b) Layout and design of the collection system;

c) A description of and specifications for all machinery, compressors, flares, piping and other appurtenances necessary to the system; and

d) A gas condensate disposal plan.

**Section 812.311 Landfill Gas Disposal**

When a permit application contains a plan for a gas collection system, then a plan for landfill gas disposal shall be submitted. The plan shall contain information to demonstrate compliance with 35 Ill. Adm. Code 811.312, including:

a) The approved air discharge permit or, if the permit is pending, a copy of the air discharge permit application required pursuant to 35 Ill. Adm. Code 200 thru 245;

b) A map showing the location of the gas processing facility;

c) Designs for the disposal system;

d) A gas processing plan which includes a description of the beneficial uses to be derived for the gas and the design of the processing system; and

e) Where an off-site processing plant is utilized, the application shall contain documentation showing that the plant meets all requirements of 35 Ill. Adm. Code 811.312(g).

**Section 812.312 Intermediate Cover**

The application shall contain a description of the material to be used as intermediate cover in accordance with 35 Ill. Adm. Code 811.313, including:

a) A description of the soil to be used, including its classification and approximate hydraulic conductivity; or

b) A demonstration that any proposed alternative materials or procedures to substitute for intermediate cover meet the minimum requirements of 35 Ill. Adm. Code 811.313.

**Section 812.313 Design of the Final Cover System**

The permit application shall contain documentation for the final cover system to demonstrate compliance with 35 Ill. Adm. Code 811.314, including:

a) Material specifications;

b) Placement techniques;

c) Estimates of settling;

d) A description of final protective cover, including a description of the soil and the depth necessary to maintain the proposed land use of the area;

e) A description showing how the low permeability layer will tie into the liner system; and

f) A construction quality assurance program, pursuant to 35 Ill. Adm. Code 811.Subpart E, which provides that the cover is constructed in compliance with all applicable requirements of 35 Ill. Adm. Code 811.

**Section 812.314 Description of the Hydrogeology**

The permit application shall contain a description of the local hydrogeologic system, which shall include the results of the investigation conducted in accordance with 35 Ill. Adm. Code 811.315 and which includes the following information:

a) A narrative description of the regional setting;

b) A narrative description characterizing the hydrogeological conditions within the permit area;

c) Geological cross sections of the permit area showing all water bearing strata, water elevations and all geological units;

d) Location of all bore holes and test pits;

e) All well and bore logs;

f) Laboratory and field testing data;

g) A detailed description of each geological unit found within the study area, including physical and geochemical properties; and

h) A description of all water bearing strata under the facility, including a potentiometric map, groundwater flow velocities and directions and a description of the water quality.

**Section 812.315 Plugging and Sealing of Drill Holes**

The application shall contain a plan describing the techniques and materials to be utilized to plug and seal drill holes in accordance with 35 Ill. Adm. Code 811.316.

**Section 812.316 Results of the Groundwater Impact Assessment**

The application shall contain the results of a groundwater impact assessment showing that the proposed unit will not violate the

requirements of 35 Ill. Adm. Code 811.317. The assessment shall contain, at a minimum, the following information:

a) Documentation of the contaminant transport model used for the assessment;

b) All data, including values of the model's parameters and site-specific hydrogeologic information used in the modeling and analysis of the groundwater impact;

c) A sensitivity analysis of the effects of changes in the model's parameters on the model's predictions;

d) Predicted concentration versus time profiles for several points within the zone of attenuation over a predicted time period of 100 years;

e) Predicted concentration versus distance profiles taken at five year increments for 100 years;

f) Documentation showing reliability of the model;

g) Documentation demonstrating validity of all model parameters and assumptions; and

h) A written evaluation and analysis, using the information from the groundwater impact assessment, showing the results of the groundwater impacts expected at the facility, such as the type and geographical extent of contamination present or expected, or the rate of movement of contaminants, to demonstrate that the groundwater impact is acceptable in accordance with 35 Ill. Adm. Code 811.317(b).

**Section 812.317 Groundwater Monitoring Program**

The permit application shall contain a groundwater monitoring plan which demonstrates compliance with 35 Ill. Adm. Code 811.318 and 811.319 and which includes the following information:

a) A site plan map showing all zones of attenuation;

b) Distance from the ground surface to the bottom of the uppermost aquifer;

c) The location and depth of all groundwater monitoring points;

d) The design of the groundwater monitoring wells, with a description of the materials to be used in constructing each well;

e) A list of the parameters to be tested at each monitoring point;

f) A concentration versus time profile for each monitoring point, showing the maximum allowable concentration at that monitoring point for the 100 years after the closure of the unit;

g) A description of the sampling procedure to be followed;

h) A description of the preservation techniques to be utilized;

i) A description of the chain of custody, packing and transportation plans for all samples to meet the requirements of 35 Ill. Adm. Code 811.318(e);

j) A description of the laboratory analysis, including laboratory procedures, quality control, and error detection;

k) A description of the statistical analysis techniques to be used for evaluating the monitoring data;

l) A description of the groundwater quality standards applicable at the facility pursuant to 35 Ill. Adm. Code 811.320, including a specific numerical value for each constituent and including an evaluation of the background concentrations of each constituent to be monitored; and

m) A description of the statistical method to be utilized when evaluating groundwater data.

**Section 812.318 Operating Plans**

a) The application shall contain all information necessary to demonstrate compliance with 35 Ill. Adm. Code 811.321(a).

b) The application shall contain a narrative description of the initial waste placement plan, to demonstrate compliance with 35 Ill. Adm. Code 811.321(b).

TITLE 35: ENVIRONMENTAL PROTECTION

SUBTITLE G: WASTE DISPOSAL

CHAPTER I: POLLUTION CONTROL BOARD

SUBCHAPTER i: SOLID WASTE AND SPECIAL WASTE HAULING

# PART 813
# PROCEDURAL REQUIREMENTS FOR PERMITTED LANDFILLS

## SUBPART A: GENERAL PROCEDURES



## SUBPART B: ADDITIONAL PROCEDURES FOR MODIFICATION AND SIGNIFICANT MODIFICATION OF PERMITS



## SUBPART C: ADDITIONAL PROCEDURES FOR THE RENEWAL OF PERMITS



## SUBPART D: ADDITIONAL PROCEDURES FOR INITIATION AND TERMINATION OF TEMPORARY AND PERMANENT CLOSURE AND POSTCLOSURE CARE



## SUBPART E: REPORTS TO BE FILED WITH THE AGENCY



AUTHORITY: Implementing Sections 5, 21, 21.1, 22, 22.17 and 28.1, and authorized by Section 27 of the Environmental Protection Act (Ill. Rev. Stat. 1989, ch. 111 1/2, pars. 1005, 1021, 1021.1, 1022, 1022.17, 1027 and 1028.1).

SOURCE: Adopted in R88-7 at 14 Ill. Reg. 15814, effective September 18, 1990.

NOTE: Capitalization indicates statutory language.

## SUBPART A: GENERAL PROCEDURES

**Section 813.101 Scope and Applicability**

a) This Subpart contains the procedures to be followed by all applicants and the Agency for applications for permits required pursuant to Section 21(d) of Environmental Protection Act (Act) (Ill. Rev. Stat. 1989, ch. 111 1/2, par. 1021(d)) and 35 Ill. Adm. Code 811, 812, and 814. The procedures in this Part apply to applications to issue a permit to develop and operate a landfill, to modify a permit, to renew an expired permit, and to conduct an experimental practice.

b) All general provisions of 35 Ill. Adm. Code 810 apply to this Part.

**Section 813.102 Delivery of Permit Application**

All permit applications shall be made on such forms as are prescribed by the Agency, and shall be mailed or delivered to the address designated by the Agency on the forms. The Agency shall provide a dated, signed receipt upon request. The Agency's record of the date of filing shall be deemed conclusive unless a contrary date is proven by a dated, signed receipt.

**Section 813.103 Agency Decision Deadlines**

a) IF THERE IS NO FINAL ACTION BY THE AGENCY WITHIN 90 DAYS AFTER THE FILING OF THE APPLICATION FOR PERMIT, THE APPLICANT MAY DEEM THE PERMIT ISSUED; EXCEPT THAT THIS TIME PERIOD SHALL BE EXTENDED TO 180 DAYS WHEN:

   1) NOTICE AND OPPORTUNITY FOR PUBLIC HEARING ARE REQUIRED BY STATE OR FEDERAL LAW OR REGULATION, OR

   2) THE APPLICATION WHICH WAS FILED IS FOR ANY PERMIT TO DEVELOP A LANDFILL. (Section 39 of the Act)

b) An application for permit pursuant to this Subpart shall not be deemed to be filed until the Agency has received all information and documentation in the form and with the content required by this Part and 35 Ill. Adm. Code 811, 812, and 814. However, if, pursuant to the standards of Section 813.105, the Agency fails to notify the applicant within 30 days after the filing of a purported application that the application is incomplete and the reason the Agency deems it incomplete, the application shall be deemed to have been filed as of the date of such purported filing as calculated pursuant to Section 813.102. The applicant may treat the Agency's notification that an application is incomplete as a denial of the application for the purposes of review pursuant to Section 813.106.

c) The applicant may waive the right to a final decision in writing prior to the applicable deadline in subsection (a).

d) The applicant may modify a permit application at any time prior to the Agency decision deadline date. Any modification of a permit application that would otherwise be considered a significant modification of an approved permit shall constitute a new application for the purposes of calculating the Agency decision deadline date.

e) The Agency shall mail all notices of final action by registered or certified mail, post marked with a date stamp and with return receipt requested. Final action shall be deemed to have taken place on the post marked date that such notice is mailed.

**Section 813.104 Standards for Issuance of a Permit**

a) THE AGENCY SHALL ISSUE A PERMIT UPON PROOF THAT THE FACILITY, UNIT, OR EQUIPMENT WILL NOT CAUSE A VIOLATION OF THIS ACT OR OF BOARD REGULATIONS SET FORTH IN 35 ILL. ADM. CODE: CHAPTER I.

b) IN GRANTING PERMITS, THE AGENCY SHALL IMPOSE SUCH CONDITIONS AS MAY BE NECESSARY TO ACCOMPLISH THE PURPOSES OF THIS ACT, AND AS ARE NOT INCONSISTENT WITH BOARD REGULATIONS SET FORTH IN 35 ILL. ADM. CODE: CHAPTER I.

c) EXCEPT FOR THOSE FACILITIES OWNED OR OPERATED BY SANITARY DISTRICTS ORGANIZED UNDER "AN ACT TO CREATE SANITARY DISTRICTS AND TO REMOVE OBSTRUCTIONS IN THE DES PLAINES AND ILLINOIS RIVERS", APPROVED MAY 29, 1889, AS NOW OR HEREAFTER AMENDED (Ill. Rev. Stat. 1989, ch. 42, par. 320 et seq.), NO PERMIT FOR THE DEVELOPMENT OR CONSTRUCTION OF A NEW REGIONAL POLLUTION CONTROL FACILITY MAY BE GRANTED BY THE AGENCY UNLESS THE APPLICANT SUBMITS PROOF TO THE AGENCY THAT THE LOCATION OF SAID FACILITY HAS BEEN APPROVED BY THE COUNTY BOARD OF THE COUNTY IF IN AN UNINCORPORATED AREA, OR THE GOVERNING BODY OF THE MUNICIPALITY WHEN IN AN INCORPORATED AREA IN WHICH THE FACILITY IS TO BE LOCATED IN ACCORDANCE WITH SECTION 39.2 OF THE ACT.

d) NO PERMIT SHALL BE ISSUED BY THE AGENCY FOR DEVELOPMENT OR OPERATION OF ANY FACILITY OR SITE LOCATED WITHIN THE BOUNDARIES OF ANY SETBACK ZONE ESTABLISHED PURSUANT TO THE ACT IN WHICH SUCH DEVELOPMENT OR OPERATION IS PROHIBITED. (Section 39 of the Act)

**Section 813.105 Standards for Denial of a Permit**

IF THE AGENCY DENIES ANY PERMIT UNDER THIS SECTION, THE AGENCY SHALL TRANSMIT TO THE APPLICANT WITHIN THE TIME LIMITATIONS OF SECTION 813.103 SPECIFIC, DETAILED STATEMENTS AS TO THE REASONS THE PERMIT APPLICATION WAS DENIED. SUCH A STATEMENT SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING:

a) THE SECTIONS OF THE ACT WHICH MAY BE VIOLATED IF THE PERMIT WERE GRANTED;

b) THE PROVISION OF THE REGULATIONS SET FORTH IN 35 ILL. ADM. CODE: CHAPTER I PROMULGATED UNDER THE ACT, WHICH MAY BE VIOLATED IF THE PERMIT WERE GRANTED;

c) THE SPECIFIC TYPE OF INFORMATION, IF ANY, WHICH THE AGENCY DEEMS THE APPLICANT DID NOT PROVIDE THE AGENCY; AND

d) A STATEMENT OF SPECIFIC REASONS WHY THE ACT AND BOARD REGULATIONS SET FORTH IN 35 ILL. ADM. CODE: CHAPTER I MIGHT NOT BE MET IF THE PERMIT WERE GRANTED. (Section 39 of the Act)

**Section 813.106 Permit Appeals**

a) IF THE AGENCY REFUSES TO GRANT OR GRANTS WITH CONDITIONS A PERMIT THE APPLICANT MAY, WITHIN 35 DAYS, PETITION FOR A HEARING BEFORE THE BOARD TO CONTEST THE DECISION OF THE AGENCY. (Section 40(a)(1) of the Act) The petition shall be filed, and the proceeding conducted, pursuant to the procedures of Section 40 of the Act and 35 Ill. Adm. Code 105.

b) Any Agency action to deny a permit or to grant a permit with conditions will not be deemed final for the purposes of appeal if the applicant has requested Agency reconsideration of that action prior to the filing of a petition pursuant to this Section.

**Section 813.107 Permit No Defense**

The issuance and possession of a permit shall not constitute a defense to a violation of the Act or any Board regulations set forth in 35 Ill. Adm. Code: Chapter I except for the development and operation of a landfill without a permit.

**Section 813.108 Term of Permit**

a) No permit issued pursuant to this Part shall have a term of more than five years.

b) A DEVELOPMENT PERMIT ISSUED UNDER SUBSECTION (A) OF SECTION 39 FOR ANY FACILITY OR SITE WHICH IS REQUIRED TO HAVE A PERMIT UNDER SUBSECTION (D) OF SECTION 21 SHALL EXPIRE AT THE END OF TWO CALENDAR YEARS FROM THE DATE UPON WHICH IT WAS ISSUED, UNLESS WITHIN THAT PERIOD THE APPLICANT HAS TAKEN ACTION TO DEVELOP THE FACILITY OR THE SITE. IN THE EVENT THAT REVIEW OF THE CONDITIONS OF THE DEVELOPMENT PERMIT IS SOUGHT PURSUANT TO SECTIONS 40 OR 41, OR THE PERMITTEE IS PREVENTED FROM COMMENCING DEVELOPMENT OF THE FACILITY OR SITE BY ANY OTHER LITIGATION BEYOND THE PERMITTEE'S CONTROL, SUCH TWO-YEAR PERIOD SHALL BE DEEMED TO BEGIN ON THE DATE UPON WHICH SUCH REVIEW PROCESS OR LITIGATION IS CONCLUDED. (Section 39(c) of the Act)

**Section 813.109 Transfer of Permits**

No permit is transferable from one person to another except as approved by the Agency. Approval shall be granted only if a new operator seeking transfer of a permit can demonstrate the ability to comply with all applicable financial requirements of Section 21.1 of the Act and 35 Ill. Adm. Code 811.Subpart G.

**Section 813.110 Adjusted Standards to Engage in Experimental Practices**

a) Experimental practices are design, construction, and operation methods and techniques which are not expressly

authorized by, and whose employment cannot be demonstrated by the applicant to be in compliance with, 35 Ill. Adm. Code 811, 812, and 814. Experimental practices may be implemented only at permitted landfills.

b) Pursuant to Section 28.1 of the Act and 35 Ill. Adm. Code 106.Subpart G, any person may, at any time, petition the Board for an adjusted standard to any standard in 35 Ill. Adm. Code 811, 812, or 814 in order to engage in an experimental practice at a permitted landfill in accordance with the requirements of this Section.

c) The petition for adjusted standard shall contain the following information in addition to that required by 35 Ill. Adm. Code 106.Subpart G. However, if the applicant believes that any of the information required by this Section is inapplicable, the applicant may so state provided that the petition contains an explanation of the inapplicability.

1) A narrative description of the experiment, describing the necessity of this experiment and an assessment of the expected outcome of this experiment;

2) A list of all standards in 35 Ill. Adm. Code 811 that must be adjusted in order to conduct the experiment and a reason why each standard must be adjusted;

3) A description of the monitoring program (see 35 Ill. Adm. Code 811) to be implemented during the experiment;

4) Criteria for evaluating the experimental practice. The criteria shall be specific enough to allow the Agency to evaluate the performance of the experimental practice from the monitoring results pursuant to subsection (f)(1);

5) A description of the methods to be implemented and the total costs to restore the facility to compliance with all standards in 35 Ill. Adm. Code 811, 812, or 814 if the experiment is determined to be a failure. The methods must be feasible with existing methods in use; and

6) The time period requested in which to conduct the experiment and documentation to show that this is the shortest practical time period in which success or failure can be determined.

d) The Board will review all petitions to conduct experimental practices in accordance with subsection (b), Section 28.1 of the Act, 35 Ill. Adm. Code 106.Subpart G and any Agency recommendation regarding the experimental practice under the following assumptions:

1) There is no way in which to conduct the experiment in compliance with all requirements of 35 Ill. Adm. Code 811, 812 or 814;

2) The experiment will be conducted in as short a time as possible if the information submitted in the petition and the Agency recommendation are not in conflict;

3) A monitoring plan to evaluate the experiment will be implemented; and

4) The site of the experiment will be restored to meet all requirements of 35 Ill. Adm. Code 811, 812 or 814 should the experiment fail.

e) Implementation of the Experimental Practice

Upon approval of the experimental practice pursuant to subsection (d) by the Board, the operator shall file an application for significant modification of the permit with the Agency pursuant to Section 813.Subpart B. The application shall contain the following information:

1) Detailed designs of all items to be constructed for use during the experiment;

2) The monitoring plan to be implemented during the experiment;

3) A plan for decommissioning and closing the experiment;

4) A time schedule for constructing the necessary items and closing, removing and stabilizing the area upon completion of the experiment;

5) An emergency cleanup plan describing the methods to be used to restore the facility to compliance with all standards in 35 Ill. Adm. Code 811 if the experiment is unsuccessful;

6) Cost estimates and financial assurance (see 35 Ill. Adm. Code 811.Subpart G) in an amount equal to the costs necessary to restore the facility to compliance with 35 Ill. Adm. Code: Chapter I.

f) Evaluation of Experimental Practice

1) After completion of the experiment all monitoring data shall be submitted to the Agency for evaluation of the experimental practice in accordance with the evaluation criteria included in the adjusted standard petition in accordance with subsection (c)(4). The Agency shall determine if the experimental practice is acceptable for implementation pursuant to Section 39 of the Act, and the following additional criteria:

A) An experimental practice shall be considered acceptable for implementation if the monitoring results meet or exceed the evaluation criteria included in the adjusted standard petition in accordance with subsection (c)(4); and

B) If the experiment does not cause or contribute to a violation of the Act or 35 Ill. Adm. Code: Chapter I.

2) Upon completion of the experiment and an Agency determination that the experimental practice is acceptable for implementation, the Agency shall return the financial assurance instrument to the operator and, shall approve permit modifications allowing the operation of the experimental practice. If the experimental practice is determined to be unacceptable for implementation, then the Agency shall return the financial assurance instrument when the facility has been restored to comply with 35 Ill. Adm. Code: Chapter I.

**Section 813.111 Agency Review of Contaminant Transport Models**

a) At the request of any person, consistent with any resource limitations, the Agency may review a groundwater

contaminant transport (GCT) model for acceptance. The person shall demonstrate that the model meets the minimum requirements of 35 Ill. Adm. Code 811.317(c)(1), (c)(2) and (c)(3).

b) The Agency may designate GCT models as acceptable for use by the applicant for a groundwater impact assessment. Such Agency designations shall be accompanied by limitations or conditions under which the model can or cannot be used. The applicant shall be relieved from demonstrating compliance with 35 Ill. Adm. Code 811.317 (c)(1), (c)(2) and (c)(3) in a permit application if a model accepted by the Agency has been used.

c) An applicant using a model accepted by the Agency shall submit documentation in a permit application showing that the model used in the groundwater impact assessment was the same model previously reviewed and accepted by the Agency and shall demonstrate that the model is acceptable for use in the site specific hydrogeology of the proposed facility.

d) The requirements of this Section shall in no way require an applicant to utilize a model accepted by the Agency. If a model is utilized that has not been reviewed and accepted by the Agency then the applicant shall include in the permit application all of the documentation necessary to demonstrate compliance with 35 Ill. Adm. Code 811.317(c)(1), (c)(2) and (c)(3).

## SUBPART B: ADDITIONAL PROCEDURES FOR MODIFICATION AND SIGNIFICANT MODIFICATION OF PERMITS

### Section 813.201 Initiation of a Modification or Significant Modification

a) Operator Initiated Modification

A modification or significant modification to an approved permit shall be initiated at the request of an operator at any time after the permit is approved. The operator initiates a modification or significant modification by application to the Agency.

b) Agency Initiated Modification

1) The Agency may modify a permit under the following conditions:

A) Discovery of a typographical or calculation error;

B) Discovery that a determination or condition was based upon false or misleading information;

C) An order of the Board issued in an action brought pursuant to Title VIII, IX or X of the Act; or

D) Promulgation of new statutes or regulations affecting the permit.

2) Modifications initiated by the Agency shall not become effective until after 45 days of receipt by the operator, unless stayed during the pendency of an appeal to the Board. All other time periods and procedures in 813.203 shall apply. The operator may request the Agency to reconsider the modification, or may file a petition with the Board pursuant to Section 813.106. All other time periods and procedures in 813.203 shall apply.

### Section 813.202 Information Required for a Significant Modification of an Approved Permit

The applicant shall submit all information required by 35 Ill. Adm. Code 812 that will be changed from that in the original or most recent approved permit.

### Section 813.203 Specific Information Required for a Significant Modification to Obtain Operating Authorization

Prior to placing into service any structure constructed at a landfill, pursuant to a construction quality assurance program in accordance with 35 Ill. Adm. Code 811.Subpart E., the applicant shall submit an acceptance report prepared in accordance with the requirements of 35 Ill. Adm. Code 811.505(d) in order to obtain an operating authorization issued by the Agency. The Agency shall issue operating authorizations as a permit condition pursuant to Section 39 of the Act and this Part.

### Section 813.204 Procedures for a Significant Modification of an Approved Permit

Applications for significant modifications shall be subject to all requirements and time schedules in Supart A.

## SUBPART C: ADDITIONAL PROCEDURES FOR THE RENEWAL OF PERMITS

### Section 813.301 Time of Filing

An application for renewal of a permit shall be filed with the Agency at least 90 or 180 days, depending upon which Agency final action deadline applies pursuant to Section 39(a) of the Act, prior to the expiration date of the existing permit.

### Section 813.302 Effect of Timely Filing

WHEN A PERMITTEE HAS MADE TIMELY AND SUFFICIENT APPLICATION FOR THE RENEWAL OF A PERMIT, THE EXISTING PERMIT SHALL CONTINUE IN FULL FORCE AND EFFECT UNTIL THE FINAL AGENCY DECISION ON THE APPLICATION HAS BEEN MADE AND ANY FINAL BOARD DECISION ON ANY APPEAL PURSUANT TO SECTION 40 HAS BEEN MADE UNLESS A LATER DATE IS FIXED BY ORDER OF A REVIEWING COURT. (Section 16(b) of the Illinois Administrative Procedure Act (Ill. Rev. Stat. 1989, ch. 127, par. 1016(b))

### Section 813.303 Information Required for a Permit Renewal

a) The operator shall submit only that information required by 35 Ill. Adm. Code 812 that has changed since the last permit review by the Agency.

b) The operator shall update the groundwater impact assessment in accordance with Section 813.304; and

c) The operator shall provide a new cost estimate for closure and postclosure care pursuant to 35 Ill. Adm. Code 811.Subpart F based upon the operations expected to occur in the next permit term.

### Section 813.304 Updated Groundwater Impact Assessment

a) The applicant shall conduct a new groundwater impact assessment in accordance with 35 Ill. Adm. Code 811.317 if any of the following changes in the facility or its operation will result in an increase in the probability of exceeding a groundwater standard beyond the zone of attenuation:

1) New or changed operating conditions;

2) Changes in the design and operation of the liner and leachate collection system;

3) Changes due to more accurate geological data;

4) Changes due to modified groundwater conditions due to off-site activity;

5) Changes due to leachate characteristics.

b) If the operator certifies that the conditions applicable to the original assessment have not changed in such a way as to result in violation of groundwater standards pursuant to 35 Ill. Adm. Code 811.320, outside the zone of attenuation and no monitoring well shows concentrations of constituents in groundwater greater than such groundwater standards, then a new groundwater impact assessment need not be performed.

**Section 813.305 Procedures for Permit Renewal**

Applications for permit renewal shall be subject to all requirements and time schedules in Subpart A.

## SUBPART D: ADDITIONAL PROCEDURES FOR INITIATION AND TERMINATION OF TEMPORARY AND PERMANENT CLOSURE AND POSTCLOSURE CARE

**Section 813.401 Agency Notification Requirements**

a) The operator shall send to the Agency a notice of closure within 30 days after the date the final volume of waste is received.

b) The operator shall notify the Agency within 30 days after any temporary suspension of waste acceptance. The operator must comply with the requirements included in a permitted closure plan in accordance with 35 Ill. Adm. Code 812.114(d) that are applicable during any such period.

c) Until closure has been completed, the operator shall maintain a copy of the closure plan at the site or at a definite location, specified in the permit, so as to be available during inspection of the site.

BOARD NOTE: 35 Ill. Adm. Code 807.Subpart E includes requirements for closure and temporary suspension and for closure and temporary suspension plans.

**Section 813.402 Certification of Closure**

a) When closure of a unit is completed, the operator shall submit to the Agency:

1) Documentation concerning closure of the closed unit including plans or diagrams of the unit as closed and date closure was completed.

2) An affidavit by the operator and the seal of a professional engineer that the unit has been closed in accordance with the closure plan and all requirements of 35 Ill. Adm. Code 811.

b) When the Agency determines, pursuant to the information received pursuant to subsection (a) and any Agency site inspection, that the unit has been closed in accordance with the specifications of the closure plan, and the closure requirements of this Part, the Agency shall:

1) Issue a certificate of closure; and

2) Specify the date the postclosure care period begins, based on the date that closure was completed.

**Section 813.403 Termination of the Permit**

a) At the end of the postclosure care period the operator and a professional engineer shall certify that postclosure care is no longer necessary. The certification shall include the affidavit of the operator, the seal of a professional engineer and documentation demonstrating that, due to compliance with the requirements of 35 Ill. Adm. Code 811, 812 and 814:

1) Leachate removal is no longer necessary;

2) Landfill gas collection is no longer necessary;

3) Gas monitoring is no longer necessary;

4) Groundwater monitoring is no longer necessary;

5) The surface has stabilized sufficiently with respect to settling and erosion so that further stabilization measures, pursuant to the postclosure care plan, are no longer necessary;

6) The facility does not constitute a threat of pollution to surface water; and

7) The operator has completed all requirements of the postclosure plan.

b) Within 90 days after receiving the certification required by subsection (a), the Agency shall notify the operator in writing that it is no longer required to maintain financial assurance for postclosure care of the site, unless the Agency determines, pursuant to the information received pursuant to subsection (a) and any Agency site inspection, that continued postclosure care is required pursuant to the postclosure care plan and this Part.

c) If the operator is not required to give financial assurance, then within 90 days after receiving the certification required by subsection (a), the Agency shall notify the operator in writing that the permit is terminated, unless the Agency determines, pursuant to the information received pursuant to subsection (a) and any Agency site inspection, that continued postclosure care is required pursuant to the postclosure care plan and this Part.

d) The operator may deem the Agency action pursuant to this Section as a denial or grant of permit with conditions for purposes of appeal pursuant to Section 40(d) of the Act and Subpart A.

## SUBPART E: REPORTS TO BE FILED WITH THE AGENCY

**Section 813.501 Annual Reports**

a) All permitted landfills shall submit annual reports to the Agency during operation and for the entire postclosure monitoring period. Such annual reports shall be filled each year by the first day of the month chosen and specified by the Agency in the permit.

b) Agency Review of the Report

1) The Agency shall conduct a review of the annual report to determine compliance with the requirements of subsection (c) and either accept the contents as complete or request additional information within 45 days of receipt of the report.

2) If the Agency fails to respond within the required time period then the report shall be considered acceptable.

3) The operator shall return the additional information to the Agency within 45 days of receipt of the request for additional information.

4) The operator may deem any Agency request for information pursuant to this Section as a permit denial for purposes of appeal pursuant to Section 40 of the Act.

c) All annual reports shall contain the following information:

1) A waste volume summary which includes:

A) Total volume of solid waste accepted at the facility in cubic meter (cubic yards) as measured at the gate;

B) Remaining solid waste capacity in each unit in cubic meter (cubic yard) as measured at the gate; and

C) A copy of all identification reports required under 35 Ill. Adm. Code 811.404

2) Monitoring data from the leachate collection system, groundwater monitoring network, gas monitoring system, and any other monitoring data which was specified in the operator's permit, including:

A) Graphical results of monitoring efforts;

B) Statistical summaries and analysis of trends;

C) Changes to the monitoring program; and

D) Discussion of error analysis, detection limits, and observed trends.

3) Proposed activities for the year

A) Amount of Waste expected in the next year;

B) Structures to be built within the next year; and

C) New monitoring stations to be installed within the next year.

4) Any modification or significant modification affecting the operation of a facility shall be included.

5) Signature of the operator or duly authorized agent as specified in 35 Ill. Adm. Code 815.102.

**Section 813.502 Quarterly Groundwater Reports**

All groundwater monitoring data shall be submitted to the Agency on a quarterly basis, in a form prescribed by the Agency, and in accordance with a schedule approved in the permit.

**Section 813.503 Information to be Retained at or near the Waste Disposal Facility**

Information developed by the operator but not yet forwarded to the Agency in a quarterly or annual report shall be kept at or near the facility for inspection by the Agency upon request during normal working hours. If there is no active office for maintenance of records at the facility during the postclosure care period, then an alternate active operation site in the state, owned or operated by the same facility operator, may be specified. The Agency must be notified of the address and telephone number of the operator at the alternative facility where the information will be retained.

TITLE 35: ENVIRONMENTAL PROTECTION

SUBTITLE G: WASTE DISPOSAL

CHAPTER I: POLLUTION CONTROL BOARD

SUBCHAPTER i: SOLID WASTE AND SPECIAL WASTE HAULING

PART 814
STANDARDS FOR EXISTING LANDFILLS AND UNITS

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814.104 Applications for Significant Modification of Permits
814.105 Effect of Timely Filing of Notification and Application for Significant Modification
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SUBPART E: STANDARDS FOR EXISTING UNITS ACCEPTING INERT WASTE ONLY, OR ACCEPTING CHEMICAL AND PUTRESCIBLE WASTES THAT MUST INITIATE CLOSURE WITHIN TWO YEARS

Section
814.501 Scope and Applicability
814.502 Standards for Operation and Closure

AUTHORITY: Implementing Sections 5, 21, 21.1, 22, 22.17 and 28.1, and authorized by Section 27 of the Environmental Protection Act (Ill. Rev. Stat. 1989, ch. 111 1/2, pars. 1005, 1021, 1021.1, 1022, 1022.17, 1028.1 and 1027).

SOURCE: Adopted in R88-7 at 14 Ill. Reg. 15850, effective September 18, 1990.

NOTE: Capitalization indicates statutory language.

SUBPART A: GENERAL REQUIREMENTS

**Section 814.101 Scope and Applicability**

a) This Part establishes the standards applicable to all existing landfill facilities which includes facilities that are not considered to be new as defined at 35 Ill. Adm. Code 810.103. This Part establishes requirements for both new and existing disposal units within such existing landfill facilities. Landfill operators are required to determine the date on which their facilities must begin closure, which is dependent upon the ability of existing units to meet the design and performance standards contained in this Part.

b) The requirements of Sections 814.104, 814.105 and 814.106 of this Subpart apply only to those landfill facilities identified as existing facilities in subsection (a) and which require an Agency issued permit.

c) All general provisions of 35 Ill. Adm. Code 810 apply to this Part.

**Section 814.102 Compliance Date**

Unless otherwise expressly provided in Section 814.105, all landfills with existing units shall comply with the requirements of this Part within six months of the effective date of this Part.

**Section 814.103 Notification to Agency**

No later than six months after the effective date of this Part, all operators shall send notification to the Agency describing the facility, estimated date of closure of existing units, and whether the facility is subject to the requirements of Subpart B, Subpart C, Subpart D, or Subpart E.

**Section 814.104 Applications for Significant Modification of Permits**

a) All operators of landfills permitted pursuant to Section 21(d) of the Environmental Protection Act (Act) (Ill. Rev. Stat. 1989, ch. 111 1/2, par 1021(d)) shall file an application for a significant modification to their permits for existing units, unless the units will be closed pursuant to Subpart E within two years of the effective date of this Part.

b) The operator of an existing unit shall submit information required by 35 Ill. Adm. Code 812 to demonstrate compliance with Subpart B, Subpart C or Subpart D, whichever is applicable.

c) The application shall be filed within 48 months of the effective date of this Part, or at such earlier time as the Agency shall specify in writing pursuant to 35 Ill. Adm.Code 807.209 or 813.201(b).

d) The application shall be made pursuant to the procedures of 35 Ill. Adm. Code 813.

**Section 814.105 Effect of Timely Filing of Notification and Application for Significant Modification**

a) Permits issued pursuant to 35 Ill. Adm. Code 807 prior to the effective date of this Part remain in full force and effect until superseded by a permit issued pursuant to this Part or until revoked as a result of an enforcement action brought pursuant to Title VIII of the Act.

TITLE 35: ENVIRONMENTAL PROTECTION
SUBTITLE G: WASTE DISPOSAL
CHAPTER I: POLLUTION CONTROL BOARD
SUBCHAPTER i: SOLID WASTE AND SPECIAL WASTE HAULING

# PART 814
# STANDARDS FOR EXISTING LANDFILLS AND UNITS

## SUBPART A: GENERAL REQUIREMENTS

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## SUBPART C: STANDARDS FOR EXISTING UNITS ACCEPTING CHEMICAL OR PUTRESCIBLE WASTES THAT MAY REMAIN OPEN FOR MORE THAN SEVEN YEARS

Section
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## SUBPART D: STANDARDS FOR EXISTING UNITS ACCEPTING CHEMICAL OR PUTRESCIBLE WASTES THAT MUST INITIATE CLOSURE WITHIN SEVEN YEARS

Section
814.401 Scope and Applicability
814.402 Applicable Standards

## SUBPART E: STANDARDS FOR EXISTING UNITS ACCEPTING INERT WASTE ONLY, OR ACCEPTING CHEMICAL AND PUTRESCIBLE WASTES THAT MUST INITIATE CLOSURE WITHIN TWO YEARS

Section
814.501 Scope and Applicability
814.502 Standards for Operation and Closure

AUTHORITY: Implementing Sections 5, 21, 21.1, 22, 22.17 and 28.1, and authorized by Section 27 of the Environmental Protection Act (Ill. Rev. Stat. 1989, ch. 111 1/2, pars. 1005, 1021, 1021.1, 1022, 1022.17, 1028.1 and 1027).

SOURCE: Adopted in R88-7 at 14 Ill. Reg. 15850, effective September 18, 1990.

NOTE: Capitalization indicates statutory language.

## SUBPART A: GENERAL REQUIREMENTS

Section 814.101 Scope and Applicability

a) This Part establishes the standards applicable to all existing landfill facilities, which includes facilities that are not considered to be new as defined at 35 Ill. Adm. Code 810.103. The existing landfill facilities covered by this Part include existing MSWLF units and lateral expansions, as defined at 35 Ill. Adm. Code 810.103. This Part establishes requirements for both new and existing disposal units within such existing landfill facilities. Landfill operators are required to determine the date on which their facilities must begin closure, which is dependent upon the ability of existing units to meet the design and performance standards contained in this Part.

b) All existing MSWLF units and lateral expansions shall be subject to the following standards:

1) An existing MSWLF unit or a lateral expansion operating under a permit modified pursuant to Section 814.104 shall comply with the standards prescribed in Subpart C or Subpart D, whichever is applicable.

2) An existing MSWLF unit or a lateral expansion operating under a permit issued pursuant to 35 Ill. Adm. Code 813 shall comply with the terms of the permit and the standards prescribed in Section 814.Subpart C for existing MSWLF units.

3) An existing MSWLF unit or a lateral expansion operating under a permit issued pursuant to 35 Ill. Adm. Code 807 shall comply with the terms of the permit and the requirements specified in Section 814.Appendix A until the units's permit is modified in accordance with Section 814.104.

4) An existing MSWLF unit or a lateral expansion that is newly required to obtain a permit under Section 21(d) of the Act on or after October 9, 1993 shall comply with the standards prescribed in Subpart C or Subpart D, whichever is applicable.

c) The requirements of Sections 814.104, 814.105 and 814.106 of this Subpart apply only to those landfill facilities identified as existing facilities in subsection (a) and which require an Agency issued permit.

d) In addition to the requirements of subsection (c), an owner or operator of an existing MSWLF unit shall comply with the following:

1) permit requirements specified in Sections 814.108 and 814.109; and

2) any other applicable Federal rules, laws, regulations, or other requirements.

BOARD NOTE: Subsection (d)(2) is derived from 40 CFR 258.3 (1992).

e) All general provisions of 35 Ill. Adm. Code 810 apply to this Part.

Section 814.102 Compliance Date

Unless otherwise expressly provided in Section 814.105 and 814.107, all landfills with existing units shall comply with the requirements of this Part

within six months of the effective date of this Part.

Section 814.103 Notification to Agency

No later than six months after the effective date of this Part, all owners or operators shall send notification to the Agency describing the facility, estimated date of closure of existing units, and whether the facility is subject to the requirements of Subpart B, Subpart C, Subpart D, or Subpart E.

Section 814.104 Applications for Significant Modification of Permits

a) All owners or operators of landfills permitted pursuant to Section 21(d) of the Environmental Protection Act (Act) (Ill. Rev. Stat. 1989, ch. 111 1/2, par 1021(d)) shall file an application for a significant modification to their permits for existing units, unless the units will be closed pursuant to Subpart E within two years of the effective date of this Part.

b) The owner or operator of an existing unit shall submit information required by 35 Ill. Adm. Code 812 to demonstrate compliance with Subpart B, Subpart C or Subpart D, whichever is applicable.

c) The application shall be filed within 48 months of the effective date of this Part, or at such earlier time as the Agency shall specify in writing pursuant to 35 Ill. Adm.Code 807.209 or 813.201(b).

d) The application shall be made pursuant to the procedures of 35 Ill. Adm. Code 813.

Section 814.105 Effect of Timely Filing of Notification and Application for Significant Modification

a) Permits issued pursuant to 35 Ill. Adm. Code 807 prior to the effective date of this Part remain in full force and effect until superseded by a permit issued pursuant to this Part or until revoked as a result of an enforcement action brought pursuant to Title VIII of the Act.

b) An owner or operator who has timely filed a notification pursuant to Section 814.103 and an application for significant permit modification pursuant to Section 814.104 shall continue operation under the terms of its existing permits until final determination by the Agency on its application and any subsequent appeal to the Board pursuant to Section 40 of the Act. During this time, the owner or operator will be deemed to be in compliance with all requirements of this Part.

Section 814.106 Agency Action on Applications for Significant Modifications to Existing Permits

The Agency shall review applications for significant modifications to existing permits in accordance with the requirements and procedures of 35 Ill. Adm. Code 813.

Section 814.107 Compliance Dates for Existing MSWLF Units and Lateral Expansions

a) Except as specified in subsections (b) or (c), all existing MSWLF units and lateral expansions shall comply with the applicable requirements of this Part in accordance with Section 814.101(b) on or before October 9, 1993.

b) An existing MSWLF unit or a lateral expansion that meets the conditions of subsections (b)(1), (b)(2), and (b)(3) and receive waste after October 9, 1993 but stop receiving waste before April 9, 1994 is exempted from the additional requirements prescribed for existing MSWLF units and lateral expansion in this Part. The exemption conditions are as follows:

1) The unit accepted 100 tons per day or less of solid waste for disposal between October 9, 1991 and October 9, 1992.

2) The unit shall not accept more than 100 tons per day for disposal between October 9, 1993 and April 9, 1994.

3) The unit is not on the National Priority List (NPL) as found in 40 CFR 300 Appendix B.

c) An existing MSWLF unit or a lateral expansion of an existing unit is exempted from the additional requirements prescribed for MSWLF units in this Part until April 8, 1994, if the Agency determines that such a unit or lateral expansion is needed to receive flood-related waste.

BOARD NOTE: The compliance dates specified in subsections (a) and (b) reflect the revisions adopted by the USEPA in the Federal Register Notification published on October 1, 1993 (see 58 FR 51536).

Section 814.108 Interim Permit Requirements for Existing MSWLF Units

a) Except for a lateral expansion of an existing MSWLF unit required to receive a permit modification under Section 321(t) of the Act, by September 1, 1993, or within 30 days following the effective date of P.A. 88-496 (September 13, 1993), whichever occurs first, the owner or operator of an existing MSWLF unit shall submit to the Agency a written application for a permit (if no permit has been issued under Section 21(d) of the Act) or a permit modification (if a permit has been issued under Section 21(d) of the Act) on forms prescribed and provided by the Agency.

b) Persons who submit an application for a permit or permit modification under subsection (a) and Section 22.42(a) of the Act shall be deemed to have an interim permit or interim permit modification on October 9, 1993, or 30 calendar days after the Agency receives the application under subsection (a) above and Section 22.42(a) of the Act, whichever occurs first, except that:

1) The Agency may impose such conditions to the interim permit or interim permit modification law as may be necessary to accomplish the purposes of the Act and as are not inconsistent with the regulations described in Section 22.41 of the Act.

2) No interim permit or interim permit modification shall be deemed issued under this subsection and subsection 22.42(b) of the Act if the Agency provides written notification to the applicant, by October 1, 1993 or within 30 calendar days after the Agency receives the application under this section, whichever occurs first, that:

A) The application is incomplete; or

B) The applicant must submit an application for a lateral expansion pursuant to Section 21(t) of the Act.

c) An interim permit or an interim permit modification deemed issued under this Section and Section 22.42 of the Act to an existing MSWLF unit shall expire upon the occurrence of the following, whichever occurs first:

1) Six calendar years from the date upon which the interim permit or interim permit modification was deemed to be issued under this Section and Section 22.42 of the Act, except that in the event that the Agency is reviewing an application for a permit or a significant modification of a permit for the MSWLF unit, or in the event that a Board review of a permit denial or conditions of a permit or significant modification of the permit for the MSWLF unit pursuant to Section 40 or 41 of the Act is pending at the end of a 6 calendar year period, the interim permit or interim permit modification shall expire upon the issuance of the Agency's final action on the application or upon the conclusion of the Board proceeding under Sections 40 or 41 of the Act, including the exhaustion of all rights of appeal of the parties to the proceeding.

2) Final action by the Agency on an application for a permit or significant modification of a permit on or after October 9, 1993, for the MSWLF unit where the Agency notifies the applicant that the Agency's review of the application included a review of the MSWLF unit's compliance with Board rules adopted under Section 22.40 or 22.41 of the Act.

3) The Board revokes the interim permit or the interim permit modification deemed issued under this Section and Section 22.42 of the Act in an enforcement action brought under the Act. (Section 22.42 of the Act.)

Section 814.109 Permit Modification Requirements for Lateral Expansions at Existing MSWLF Units

a) No person shall cause or allow a lateral expansion of a municipal solid waste landfill unit on or after October 9, 1993, without a permit modification, granted by the Agency, that authorizes the lateral expansion. (Section 21(t) of the Act.)

b) An owner or operator of an existing MSWLF unit seeking a lateral expansion shall submit to the Agency an application for a permit modification using the forms specified by the Agency.

c) An owner or operator of an existing MSWLF unit operating under a permit modified pursuant to Section 814.104 shall submit the information required by 35 Ill. Adm. Code 811 and 812 to demonstrate compliance with the additional requirements prescribed for lateral expansions under Subpart C or Subpart D, whichever is applicable.

d) An owner or operator of an existing MSWLF unit operating under a permit issued pursuant to 35 Ill. Adm. Code 813 shall submit the information required by 35 Ill. Adm. Code 811 and 812 to demonstrate compliance with the additional requirements prescribed for existing MSWLF units under Section 814.Subpart C.

e) An owner or operator of an existing MSWLF unit operating in accordance with Section 814.105 under a permit issued pursuant to 30 Ill. Adm. Code 807 shall submit the information required by Section 814.Appendix A to demonstrate compliance with the specific Subtitle D standards listed in Appendix A.

f) The application shall be made pursuant to the permit modification procedures of 35 Ill. Adm. Code 813 or 807, whichever is applicable.

BOARD NOTE: The Board envisions that the information requirements for existing MSWLF units with permits issued pursuant to 35 Ill. Adm. Code 813 and 814 (subsections (c) and (d)) will be minimal, since most of the information required by Parts 811 and 812 would have been submitted to the Agency along with the application for a new permit or a significant modification of an existing permit.

## SUBPART B: STANDARDS FOR UNITS ACCEPTING INERT WASTE

### Section 814.201 Scope and Applicability

a) The standards in this Subpart are applicable to all existing units of landfills, including those exempt from permit requirements in accordance with Section 21(d) of the Act, that have accepted or accept only inert waste. Based on an evaluation of the information submitted pursuant to Subpart A and any Agency site inspection, units that meet the requirements of this Subpart may remain open for an indefinite period of time after the effective date of this Part.

b) Based on an evaluation of the information submitted pursuant to Subpart A and any Agency site inspection, units which are unable to comply with the requirements of this Subpart are subject to the requirements of Subpart D.

### Section 814.202 Applicable Standards

Units which accept only inert waste shall be subject to all of the requirements of 35 Ill. Adm. Code 811.Subparts A and B.

## SUBPART C: STANDARDS FOR EXISTING UNITS ACCEPTING CHEMICAL OR PUTRESCIBLE WASTES THAT MAY REMAIN OPEN FOR MORE THAN SEVEN YEARS

### Section 814.301 Scope and Applicability

a) The standards in this Subpart are applicable to all existing units of landfills, including those exempt from permit requirements in accordance with Section 21 (d) of the Act, that have accepted or accept chemical and putrescible wastes. Based on an evaluation of the information submitted pursuant to Subpart A and any Agency site inspection, units that meet the requirements of this Subpart may remain open for an indefinite period of time beyond seven years after the effective date of this Part.

b) Based on an evaluation of the information submitted pursuant to Subpart A and any Agency site inspection, units which are unable to comply with the requirements of this Subpart are subject to the requirements of Subpart D or Subpart E.

Section 814.302 Applicable Standards

a) All of the requirements for new units described in 35 Ill. Adm. Code 811 shall apply to units regulated under this Subpart except the following:

1) The location standards in 35 Ill. Adm. Code 811.302(a), (d), (e) and (f);

2) The foundation and mass stability analysis standards in 35 Ill. Adm. Code 811.304 and 811.305;

3) The final cover requirements of 35 Ill. Adm Code 811.314 shall not apply to units or parts of units closed, covered and vegetated prior to the effective date of this Part.

4) The liner and leachate drainage and collection requirements of 35 Ill. Adm. Code 811.306, 811.307, and 811.308; and

5) The hydrogeological site investigation requirements of 35 Ill. Adm. Code 811.315, except that information shall be collected to implement a groundwater monitoring program in accordance with 35 Ill. Adm. Code 811.318 and 811.319 and establish background concentrations for the purpose of establishing water quality standards pursuant to 35 Ill. Adm. Code 811.320; and

b) Units regulated under this Subpart shall be subject to the following standards:

1) The unit must be equipped with a system which will effectively drain and collect leachate and transport it to a leachate management system;

2) The owner or operator shall provide a long-term static safety factor of at least 1.5 to protect a completed unit against slope failure;

3) Calculation of the Design Period

For the purposes of calculating financial assurance for existing landfills, other than existing MSWLF units and lateral expansions, the design period shall be calculated as follows:

A) The design period shall be no less than the operating life of the landfill plus fifteen years of postclosure care;

B) The postclosure care period shall be extended by three years for each year the unit is expected to be in operation up to the applicable design period required by 35 Ill. Adm. Code 811 (For example, an existing unit with expected operating lives of three, seven or 12 years after the effective date of this Part would be required to provide financial assurance during operation and for a postclosure care period of either 15 years since 3 x 3 = 9 years is less than the 15 year minimum specified in subsection (b)(3)(A); 21 years since 3 x 7 = 21 years; or 30 years since 3 x 13 = 39 years is greater than the 30 years specified in Section 811.303(a), respectively); and

C) The design period may not be reduced as allowed by 35 Ill. Adm. Code 811.303(b) and (c).

c) Airport Safety Requirements for existing MSWLF units and lateral expansions.

1) An owner or operator of an existing MSWLF unit or a lateral expansion that is located within 10,000 feet (3,048 meters) of any airport runway end used by turbojet aircraft or within 5,000 feet (1,524 meters) of any airport runway end used by only piston-type aircraft shall:

A) Demonstrate that the unit is designed and operated so that the MSWLF unit does not pose a bird hazard to aircraft; and

B) Place the demonstration required by subsection (c)(1)(A) of this section in the operating record and submit a copy of the demonstration to the Agency.

2) An owner or operator of an existing MSWLF unit seeking a lateral expansion within a five-mile radius of any airport runway end used by turbojet or piston-type aircraft shall notify the affected airport and the Federal Aviation Administration (FAA).

3) For purposes of this Section:

A) "Airport" means public-use airport open to the public without prior permission and without restrictions within the physical capacities of available facilities.

B) "Bird hazard" means an increase in the likelihood of bird/aircraft collisions that may cause damage to the aircraft or injury to its occupants.

d) Notwithstanding any exemptions under subsection (a), existing MSWLF units shall be subject to the foundation and mass stability standards at 35 Ill. Adm. Code 811.304, 811.305 and 811.306(b).

e) Notwithstanding any exemptions under subsection (a) or any requirements under subsection (b), later expansions at existing MSWLF units shall be subject to the following requirements:

1) The foundation and mass stability standards at 35 Ill. Adm. Code 811.304 and 811.305;

2) The liner and leachate drainage and collection requirements at 35 Ill. Adm. Code 811.306, 811.307, and 811.308; and

3) The groundwater impact assessment requirements at 35 Ill. Adm. Code 811.317.

f) Existing MSWLF units that are unable to meet the location restrictions pertaining to floodplains and airports specified at Sections 814.302(a) and 814.302(c), or the foundation and mass stability standards specified at Section 814.302(d) shall close by October 9, 1996. Such units shall comply with all of the applicable standards of this Part including closure and postclosure care activities.

g) The deadline for closure of required by subsection (f) of this Section may be extended up to two years if the owner or operator of an existing MSWLF unit demonstrates to the Agency that:

1) There is no available alternative disposal capacity; and

2) There is no immediate threat to human health and the environment.

BOARD NOTE: Subsection (c) is derived from 40 CFR 258.10 (1992). Subsections (f) and (g) are derived from 40 CFR 258.16 (1992).

## SUBPART D: STANDARDS FOR EXISTING UNITS ACCEPTING CHEMICAL OR PUTRESCIBLE WASTES THAT MUST INITIATE CLOSURE WITHIN SEVEN YEARS

### Section 814.401 Scope and Applicability

a) The standards in this Subpart are applicable to all existing units of landfills, including those exempt from permit requirements in accordance with Section 21(d) of the Act, that have accepted or accept chemical and putrescible wastes. Based on an evaluation of the information submitted pursuant to Subpart A and any Agency site inspection, units that meet the requirements of this Subpart shall initiate closure between two and seven years after the effective date of this Part.

b) Based on an evaluation of the information submitted pursuant to Subpart A and any Agency site inspection, units which are unable to comply with the requirements of this Section are subject to the requirements of Subpart E.

### Section 814.402 Applicable Standards

a) All of the requirements for new units described in 35 Ill. Adm. Code 811 shall apply to units regulated under this Subpart except the following:

1) The location standards in 35 Ill. Adm. Code 811.302(a), (c), (d), (e), and (f);

2) The foundation and mass stability analysis standards in 35 Ill. Adm. Code 811.304 and 811.305;

3) The liner and leachate drainage and collection requirements of 35 Ill. Adm. Code 811.306, 811.307, and 811.308;

4) The final cover requirements of 35 Ill. Adm Code 811.314 shall not apply to units or parts of units closed, covered and vegetated prior to the effective date of this Part;

5) The hydrogeological site investigation requirements of 35 Ill. Adm. Code 811.315;

6) The groundwater impact assessment standards of 35 Ill. Adm. Code 811.317;

7) The groundwater monitoring program requirements of 35 Ill. Adm. Code 811.318(c); and

8) The groundwater quality standards of 35 Ill. Adm. Code 811.320(a), (b) and (c).

b) The following standards shall apply to units regulated under this Subpart:

1) No new units shall be opened and an existing unit may not expand beyond the area included in a permit prior to the effective date of this Part or, in the case of permit exempt facilities, beyond the area needed for landfilling to continue until closure is initiated.

2) After the effective date of this Part, the unit may not apply for supplemental wastestream permits to accept new special wastes. However, the unit may continue to accept special waste under permits existing prior to the effective date of this Part and may renew those permits as necessary.

3) Groundwater Standards

A unit shall not contaminate a source of drinking water at the compliance boundary, defined as any point on the edge of the unit at or below the ground surface. At any point on the compliance boundary, the concentration of constituents shall not exceed the water quality standards specified in 35 Ill. Adm. Code 302.301, 302.303, 302.304, and 302.305. The Board may provide for a zone of attenuation and adjust the compliance boundary in accordance with Section 28.1 of the Act and the procedures of 35 Ill. Adm. Code 106.Subpart G upon petition demonstration by the owner or operator that the alternative compliance boundary will not result in contamination of groundwater which may be needed or used for human consumption. In reviewing such petitions, the Board will consider the following factors:

A) The hydrogeological characteristics of the unit and surrounding land, including any natural attenuation and dilution characteristics of the aquifer;

B) The volume and physical and chemical characteristics of the leachate;

C) The quantity, quality, and direction of flow of groundwater underlying the facility;

D) The proximity and withdrawal rates of groundwater users;

E) The availability of alternative drinking water supplies;

F) The existing quality of the groundwater, including other sources of contamination and their cumulative impacts on the groundwater;

G) Public health, safety, and welfare effects; and

H) In no case shall the zone of compliance extend beyond the facility property line or beyond the annual high water mark of any navigable surface water.

I) Notwithstanding the limitations of subsection 814.402(b)(3)(H), in no case shall the zone of compliance at an existing MSWLF unit extend beyond 150 meters from the edge of the unit.

4) Calculation of the Design Period

For the purposes of calculating financial assurance for existing

landfills, other than existing MSWLF units and lateral expansions, the design period shall be calculated as follows:

A) The design period shall be no less than five years; and

B) The postclosure care period shall be extended by three years for each year the unit is expected to be in operation up to the applicable design period required by 35 Ill. Adm. Code 811. (For example, an existing unit with an expected life of three years after the effective date of this Part would be required to provide financial assurance for nine years of postclosure care, 9 = 3 x 3.)

C) The design period may not be reduced as allowed by 35 Ill. Adm. Code 811.303(b) and (c).

c) Airport Safety Requirements for existing MSWLF units and lateral expansions.

1) An owner or operator of an existing MSWLF unit or a lateral expansion that is located within 10,000 feet (3,048 meters) of any airport runway end used by turbojet aircraft or within 5,000 feet (1,524 meters) of any airport runway end used by only piston-type aircraft shall:

A) Demonstrate that the unit is designed and operated so that the MSWLF unit does not pose a bird hazard to aircraft; and

B) Place the demonstration required by subsection (c)(1)(A) of this section in the operating record and submit a copy of the demonstration to the Agency.

2) An owner or operator of an existing MSWLF unit seeking a lateral expansion within a five-mile radius of any airport runway end used by turbojet or piston-type aircraft shall notify the affected airport and the Federal Aviation Administration (FAA).

3) For purposes of this Section:

A) "Airport" means public-use airport open to the public without prior permission and without restrictions within the physical capacities of available facilities.

B) "Bird hazard" means an increase in the likelihood of bird/aircraft collisions that may cause damage to the aircraft or injury to its occupants.

d) Notwithstanding any exemptions under subsection (b), existing MSWLF units shall be subject to the foundation and mass stability standards at 35 Ill. Adm. Code 811.304, 811.305 and 811.306(b).

e) Notwithstanding any exemptions under subsection (a) or any requirements under subsection (b), later expansions at existing MSWLF units shall be subject to the following requirements:

1) The foundation and mass stability standards at 35 Ill. Adm. Code 811.304 and 811.305;

2) The liner and leachate drainage and collection requirements at 35

Ill. Adm. Code 811.306, 811.307, and 811.308; and

3) The groundwater impact assessment requirements at 35 Ill. Adm. Code 811.317, if the unit is equipped with a compacted earth liner in accordance with Section 811.306(d).

4) The groundwater monitoring systems requirements at 35 Ill. Adm. Code 811.318;

5) The groundwater quality standards at 35 Ill. Adm. Code 811.320.

f) Existing MSWLF units that are unable to meet the location restrictions pertaining to floodplains and airports specified at Sections 814.302(a) and 814.302(c) following or the foundation and mass stability standards specified at Section 814.302(d) shall close by October 9, 1996. Such units shall comply with all of the applicable standards of this Part including closure and postclosure care activities.

g) The deadline for closure of required by subsection (f) of this Section may be extended up to two years if the owner or operator of an existing MSWLF unit demonstrates to the Agency that:

1) There is no available alternative disposal capacity; and

2) There is no immediate threat to human health and the environment.

BOARD NOTE: Subsection 814.402(b)(3)(H) implements the compliance zone distance requirement specified at 40 CFR 258.40(d) (1992). Subsection (c) is derived from 40 CFR 258.10. Subsections (f) and (g) are derived from 40 CFR 258.16 (1992).

## SUBPART E: STANDARDS FOR EXISTING UNITS ACCEPTING INERT WASTE ONLY, OR ACCEPTING CHEMICAL AND PUTRESCIBLE WASTES THAT MUST INITIATE CLOSURE WITHIN TWO YEARS

### Section 814.501 Scope and Applicability

a) The standards in this Subpart are applicable to all existing units of landfills, including those exempt from permit requirements in accordance with Section 21(d) of the Act, that accept inert waste only, or which accept chemical and putrescible wastes.

b) All units that cannot demonstrate compliance with the requirements of Subpart B, Subpart C or Subpart D are scheduled to begin closure within two years of the effective date of this Part must begin closure within two years of the effective date of this Part.

c) A new permit shall not be required for any facility at which all units will close within two years of the effective date of this Part.

### Section 814.502 Standards for Operation and Closure

a) All units regulated in this Subpart are subject to all requirements in 35 Ill. Adm. Code 807.

b) All units regulated under this Subpart are subject to all conditions of the existing permit.

Section 814.Appendix A Additional Requirements for Existing MSWLF Units and Lateral Expansions Operating Under Permits Issued Pursuant to 35 Ill. Adm. Code 807.

a) An existing MSWLF unit operating under a permit issued pursuant to 35 Ill. Adm. Code 807 shall comply with the following requirements of the federal Subtitle D standards under 40 CFR 258 (1992) until the unit's permit is modified in accordance with Section 814.104:

1) Location restrictions:

A) 40 CFR 258.10(a) and (c);
B) 40 CFR 258.11 (a);
C) 40 CFR 258.15;
D) 40 CFR 258.16 (a);

2) Operating standards:

A) 40 CFR 258.20;
B) 40 CFR 258.23;
C) 40 CFR 258.26;
D) 40 CFR 258.27;
E) 40 CFR 258.28;
F) 40 CFR 258.29 (a) and (c);

3) Closure and postclosure care:

A) 40 CFR 258.60 (c)(2) and (c)(3), (d), (f), (g) and (i);
B) 40 CFR 258.61 (a), (c)(3) and (d);

4) Financial assurance requirements:

A) 40 CFR 258.70 (a);
B) 40 CFR 258.71 (a)(2);
C) 40 CFR 258.72 (a)(1) and (a)(2);
D) 40 CFR 258.73; and
E) 40 CFR 258.74.

b) In addition to the requirements of subsection (a), all existing MSWLF units, including municipally owned and operated on-site facilities, shall comply with the financial assurance requirements specified at 35 Ill. Adm. Code 807.Subpart F.

c) A lateral expansion at an existing MSWLF unit operating under a permit issued pursuant to 35 Ill. Adm. Code 807 shall comply with the following requirements of the federal Subtitle D standards under 40 CFR 258 (1992) until the unit's permit is modified in accordance with Section 814.104:

1) Location restrictions:

A) 40 CFR 258.10 (a), (b) and (c);
B) 40 CFR 258.11 (a);
C) 40 CFR 258.12 (a);
D) 40 CFR 258.13;
E) 40 CFR 258.14;
F) 40 CFR 258.15;
G) 40 CFR 258.16 (a);

2) Operating standards:

A) 40 CFR 258.20;
B) 40 CFR 258.23;
C) 40 CFR 258.26;
D) 40 CFR 258.27;
E) 40 CFR 258.28;
F) 40 CFR 258.29 (a) and (c);

3) Closure and postclosure care:

A) 40 CFR 258.60 (c)(2) and (c)(3), (d), (f), (g) and (i);
B) 40 CFR 258.61 (a), (c)(3) and (d);

4) Financial assurance requirements:

A) 40 CFR 258.70 (a);
B) 40 CFR 258.71 (a)(2);
C) 40 CFR 258.72 (a)(1) and (a)(2);
D) 40 CFR 258.73; and
E) 40 CFR 258.74.

c) In addition to the requirements of subsection (b) of this appendix, a lateral expansion at an existing MSWLF unit operating under a permit issued pursuant to 35 Ill. Adm. Code 807 shall comply with the following requirements:

1) Flexible membrane liner requirements prescribed at 35 Ill. Adm. Code 811.306 (d)(5)(A); and

2) All existing MSWLF units including municipally owned and operated and on-site facilities shall with the financial assurance requirements specified at 35 Ill. Adm. Code 807.Subpart F.

# APPENDIX B
## ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
### Division of Land Pollution Control
## LANDFILL APPLICATION GUIDANCE

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

# LPC-PA2
# INSTRUCTIONS FOR THE APPLICATION FOR A PERMIT TO DEVELOP A NON-HAZARDOUS LANDFILL

## General Information

Read the enclosed instructions carefully to acquire an understanding of permit application requirements. The application form is to be supplemented by plans, specifications, and reports which are required to describe the development and operation of the site. The information submitted by the applicant must provide the Illinois Environmental Protection Agency with assurance that the facility will not cause a violation of the Environmental Protection Act or regulations adopted thereunder. This form has been developed for non-hazardous landfills as defined in 35 IAC 810.103. This form provides general guidance for application preparation. In all cases, the Act and regulations set forth the minimum information that is required to obtain a permit. It is essential for anyone preparing an application to have a thorough working understanding of 35 IAC 810-815.

All data and information should be typed or legibly printed in ink.

For any information requested but not provided, justification demonstrating the reason(s) for not doing so must be stated.

## Who Should Use This Form

Persons requesting a permit to develop a new facility, or facilities that are expanding, or adding new units should utilize this application. When application is made for these types of activities the applicant should address any existing area with respect to any existing permit to see whether changes are necessary. If no changes are necessary to existing permits, that fact should be so indicated. This form should also be used as a guide to prepare an initial significant modification of an existing facility. Additional instructions for those modifications are available as a guide in the preparation of a significant modification.

Submit an original and three copies of all information requested in the application to:

Illinois Environmental Protection Agency
Division of Land Pollution Control
Permit Section - #33
2200 Churchill Road
Post Office Box 19276
Springfield, Illinois 62794-9276

Engineering features of plans, specifications, and reports must be certified by an Illinois Registered Professional Engineer and must bear his seal and signature along with the signature or seal of any other licensed professional who has supplied data contained in the submittal. When such data is obtained from published sources, references are to be included. It is critical that the applicant retain a copy of the application and all correspondence sent to the Agency. If more than one Engineer prepared designs or supervised the

preparation of designs, it should be so certified. Any revised or additional designs submitted after the initial submittal shall also be certified.

In accordance with the Environmental Protection Act, all information submitted as part of the application is available to the public except when specifically designated by the applicant to be treated confidentially as regarding a trade secret process in accordance with Section 7(a) of the Environmental Protection Act.

The LPC-PA2 form must be accompanied by the "General Application For Permit" (LPC-PA1)

Due to the amount and varying types of information required to be submitted, the application form will have to be supplemented by various documents and reports. These instructions include Appendices which, depending on the type of waste facility proposed, set out additional information. These instructions explain how to complete the LPC-PA2 form and how to prepare the General Information Document which is a supplement to the LPC-PA2 form. The General Information Document includes maps, plans and descriptions etc. needed for all types of landfills. In addition, specific appendices list detailed information which may also need to be included. For example inert waste landfills need only complete the LPC-PA1 and LPC-PA2 forms and prepare the reports described in the LPC-PA2 instructions, Appendix A and applicable portions of Appendix E.

Information required by the General Information Document may need to be shown in conjunction with information required by one or more of the appendices to be seen in the proper context. In situations like this, including information required by an appendix in the General Information Document is acceptable. However, when this is done, the appendix must include a reference describing where the information can be found.

Please read all instructions, forms and appendices applicable to the type of facility being proposed prior to beginning. If you have any questions contact the Solid Waste Unit of the Permit Section at 217/782-6762.

## INSTRUCTIONS FOR COMPLETING LPC-PA2 AND PREPARING THE GENERAL INFORMATION DOCUMENT

I. Site Name:

Provide the name by which the site is to be known for commercial or business purposes. Provide a site number if one has been previously issued for this site.

II. Applicant Information:

A. The full legal name of the owner and operator must be indicated. If the owner is the operator, that fact should be so indicated. Please be advised that since the operator is the entity that conducts waste management activities, any permits will be issued to the operator. Signatures are to be placed on the cover application (LPC-PA1).

B. The proper legal status of the owner and operator should be noted.

C. Please indicate the relationship between the owner and operator by checking the appropriate boxes.

III. Site Location Map:

The permit application shall contain a site location map on the most recent United States Geological Survey (USGS) quadrangle of the area from the 7 1/2 minute series (topographic), or on such other map whose scale clearly shows the following information:

A. The permit area and all adjacent property, extending at least 3300 feet beyond the boundary of the of the facility;

B. All surface waters;

C. The prevailing wind direction;

D. All rivers designated for protection under the Wild and Scenic Rivers Act (16 U.S.C. 1271 et seq.);

E. The limits of all 100-year floodplains;

F. Any known natural areas designated as a Dedicated Illinois Nature Preserve pursuant to the Illinois Natural Areas Preservation Act (Ill. Rev. Stat. 1989, ch. 105, par. 701 et seq.);

G. Any known historic and archaeological sites designated by the National Historic Preservation Act (16 U.S.C. 470 et seq.) and the Illinois Historic Preservation Act (Ill. Rev. Stat. 1989 ch. 127, par. 133d1 et seq.);

H. All areas identified as critical habitat pursuant to the Endangered Species Act (16 U.S.C. 1531 et seq.) and the Illinois Endangered Species Protection Act (Ill. Rev. Stat. 1989, ch. 8, par. 331 et seq.); and

I. All main service corridors, transportation routes, and access roads to the facility.

IV. Facility Background:

Check the box(es) that most accurately describe the facility. Provide the permit number(s) of all existing permits. Attach additional sheets if necessary.

V. General Facility Information:

A. The application should include a directory of titles of all maps and specification sheets which are to be reviewed as part of the Application.

B. Provide a separate site plan map, or maps showing the location of the facility on a scale no smaller than one inch equals 200 feet with a two-foot contour interval. The following information shall be shown:

1. The entire permit area;

2. The boundaries of the facility and all units included in the facility;

3. Location of borrow areas;

4. Boundaries of all areas to be disturbed;

5. The proposed phasing of the facility, including a delineation of the approximate area to be disturbed each year and areas expected to be closed each year in compliance with 35 IAC 811.107(a);

6. All roads in and around the facility;

7. Devices for controlling access to the facility;

8. Devices for controlling litter;

9. Fire protection facilities; and

10. Utilities.

C. Provide at least two cross sectional drawings with a scale no smaller than one inch equals 200 feet showing the design features of all units (i.e. the waste envelope, final cover system, liner and leachate systems, surface water control structures, etc.) with respect to the facility boundaries.

D. Describe the facility:

The narrative descriptions should be included in the "General Information Document" and should provide a brief explanation of each item requested and any other special feature or relevant fact about the operation. The detailed specific information should be contained in additional reports and the descriptions should refer to these reports and identify the location of the information referenced.

E. Location Standards:

The purpose of the location standards is to restrict the location of landfills to areas where they will not invade the scenic or recreational values of rivers; restrict or reduce the temporary water storage capacity of a 100-year floodplain, jeopardize nature preserves or any endangered wildlife, threaten or destroy

irreplaceable historical and archeological sites, invade a wetland, or cause water pollution. To document this, the application must include written consent or current status of any request made on the project from the governmental entities listed in the table below on the indicated topics.

| Regulation | Topic | Department or Agency |
|---|---|---|
| 811.102(a) | Wild and Scenic Rivers Act | Illinois Department of Conservation |
| 811.102(b) | Impact on a 100-year flood | Illinois Department of Transportation or other sources |
| 811.102(c) | Impact on historical and archaeological sites | Illinois Historical Preservation Agency and Illinois Nature Preserve Commission |
| 811.102(d) | Impact on endangered species and their habitat | Illinois Department of Conservation |
| 811.102(e) | Section 404 of Clean Water Act (wetlands) | U.S. Army Corps of Engineers and if appropriate Illinois Environmental Protection Agency (Division of Water Pollution Control) |
| 811.102(f) | Section 208 of Clean Water Act (Nonpoint source pollution) | Illinois Environmental Protection Agency (Division of Water Pollution Control) |

F. Surface Water Control:

A surface water control plan is required for all landfills. In the General Information Document provide the listed information.

Detailed structure designs should be contained in additional reports and this plan should reference those.

G. Daily Cover:

All landfills must address the plan for limiting adverse effects of exposed waste on a daily basis. This demonstration must be included in the General Information Document.

H. Legal Description

The permit application shall contain a legal description of the facility boundary and the boundaries of all units included in the facility. This legal description shall identify the nature and location of all stakes and monuments required by Section 811.104 and

shall be prepared by or under the supervision of a professional surveyor, who shall affix a professional seal to the work.

I. Property Ownership

The permit application shall contain a certificate of ownership of the permit area or a copy of the lease. The lease shall clearly specify that the owner authorizes the construction of a waste disposal facility on the leased premises, and the duration of the lease will be at least as long as the design period of the landfill. Any prior conduct certifications issued to the owner or operator shall be included in the permit application. The owner and operator shall certify that the Agency will be notified within seven days of any changes in ownership or conditions in the lease affecting the permit area.

VI. Supplemental Information

Applications shall be supplemented by the individual documents or reports responding to the Appendices referenced in these instructions. Part VI 1 and 2 or 3 of the LPC-PA2 form lists the additional reports required for the type of landfill being proposed. You may include any additional reports or information that you feel is appropriate. Appended to these instructions are specific outlines and instructions detailing the specific information to be included in the additional reports.

VII. Operation

The applicant must notify the Illinois Environmental Protection Agency in writing and certify that the development of the site has been completed in accordance with the application and Landfill Permit before a pre-operation site inspection can be conducted or an Operating Authorization issued.

A separate permit application must be submitted in accordance with 35 IAC 813.203. The operating authorization is required to be obtained prior to accepting waste for disposal. The drainage control plan must be in place and functional during construction, but need not have an operating authorization. Any discharge of waters from disturbed areas must have the necessary water pollution control permits.

State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

2200 Churchill Road, Springfield, IL 62794-9276

**APPLICATION FOR A PERMIT TO DEVELOP A NONHAZARDOUS LANDFILL (LPC-PA2)**

I. **Site Name:** _____ **County:** _____

**Site Number:** __ __ __ __ __ __ __ __ __ __ __

II. **Applicant Information:**

1.

| | Owner | Operator (if different) |
|---|---|---|
| **Name:** | _____ | _____ |
| **Phone:** | ( ) _____ | ( ) _____ |

2. **Ownership and Operator Status:**

| | Owner | Operator |
|---|---|---|
| **Corporation** | _____ | _____ |
| **Partnership** | _____ | _____ |
| **Sole Proprietor** | _____ | _____ |
| **Governmental Body** | _____ | _____ |
| **Other:** | | |
| _____ | _____ | _____ |

3. Land is:

Owned by Applicant Operator _____

Leased by Applicant _____

Beginning Date on Lease _____

Expiration Date on Lease _____

Held in Trust* _____

*(Note: Lands held in trust must complete form LPC-PA9)

III. **Site Location Map:**

**Attach a copy of the United States Geological Survey (U.S.G.S.) quadrangle map (7.5 minute quadrangle, if published) and/or a topographic map of the area which contains the site.**

**Quadrangle map provided:** _____ (Name) _____ (Date)

**Other map provided:** _____ (Title)

IV. **Facility Background:**

_____ This is a new unit within a new facility.

_____ This is a new unit within an existing facility.

_____ This is a vertical, horizontal, vertical and horizontal (circle the appropriate one) expansion of an existing unit (or units) within an existing facility

If this is a modification of an existing facility, list the environmental permits which have been issued to the facility and their dates of issuance.

_____ _____

_____ _____

_____ _____

_____ _____

V. General Facility Information:

The following information must accompany the application as a General Information Document. Please indicate the location in the application for the documents being submitted with this application.

Location in Application

_____ 1. A directory of maps, plan sheets, etc. included in the application.

_____ 2. A Site Plan Map(s).

3. Narrative descriptions of the facility. The permit application shall contain a written description of the facility with supporting documentation describing the procedures and plans that will be used at the facility to comply with the requirements of 35 IAC 811 and any other applicable Parts of 35 Ill. Adm. Code: Chapter I. Such descriptions shall include, but not be limited to the following information:

_____ a) The type of waste disposal units and the types of wastes expected in each unit;

_____ b) An estimate of the maximum capacity of each unit and the rate at which waste is to be placed;

_____ c) The manner in which waste will be placed and compacted to comply with 35 IAC 811.105;

_____ d) The estimated unit weight of the waste;

_____ e) The length of time each unit will receive waste;

_____ f) The design period to be used for each unit;

_____ g) Size of the open face area, including all information showing that slopes steeper than two to one will be stable and in compliance with 35 IAC 811.107(b);

_____ h) A description of how units will be developed to allow contemporaneous closure and stabilization pursuant to 35 IAC 811.110, 811.111, 811.204, 811.205 or 811.322;

_____ i) A description of all equipment to be used at the facility for complying with 35 IAC 807.304;

_____ j) A litter control plan for complying with 35 IAC 811.107(k);

_____ k) A salvaging plan including a description of all salvage facilities and a plan for complying with 35 IAC 811.108;

_____ l) A description of all utilities for operation in compliance with 35 IAC 811.107(d);

_____ m) A boundary control plan describing how the operator will comply the requirements of 35 IAC 811.109;

_____ n) A maintenance plan describing how the operator will comply with 35 IAC 811.107(c) and (e);

_____ o) An air quality plan describing the methods to be used to comply with the open burning requirements of 35 IAC 811.107(f) and for controlling dust in compliance with 35 IAC 811.107(g);

_____ p) A noise control plan describing how the operator will control noise in compliance with 35 IAC 811.107(h);

_____ q) An odor control plan;

_____ r) A vector control plan to comply with 35 IAC 811.107(i);

_____ s) A firefighting and fire safety plan;

_____ t) A transportation plan that includes all existing and planned roads in the facility that will be used during the operation of the landfill facility; the size and type of such roads and the frequency with which they will be used; and

_____ u) A plan to prevent the tracking of mud by hauling vehicles onto public roadways.

_____ v) Other special features or relevant items.

4. The location documentation listed below should be included in the General Information Document.

_____ A. Documentation that the facility will operate in compliance with 35 IAC 811.102(a).

_____ B. A floodplain determination containing:

_____ (1) Documentation that the facility is not located within the floodplain of the 100-year flood event; or

_____ (2) Documentation that the facility meets the requirements of 35 IAC 811.102(b).

_____ C. Documentation from the State Historic Preservation Officer that the facility will be in compliance with 35 IAC 811.102(c).

_____ D. Documentation from the Illinois Nature Preserves Commission that the facility will be in compliance with 35 IAC 811.102(c) as it relates to any Dedicated Illinois Nature Preserve.

_____ E. Documentation that the facility will be in compliance with 35 IAC 811.102(d).

_____ F. Documentation that the facility located within a wetland will not cause a violation of Section 404 of the Clean Water Act (35 U.S.C. 1344).

_____ G. Documentation that the facility is in compliance with 35 IAC 811.102(f).

5. The surface water control plan which demonstrates compliance with 35 IAC 811.103 shall include at least the following:

_____ A. A copy of the approved National Pollutant Discharge Elimination System (NPDES) permit issued pursuant to 35 IAC 309 or, if a permit is pending, a copy of the NPDES permit application to discharge runoff from all disturbed areas;

_____ B. A map showing the location of all structures affected by the surface water from disturbed areas on the facility;

_____ C. Discussions of all structures to be constructed during development of the facility and during the first five year operating period with reference to their detailed designs; and

_____ D. Estimated construction dates of all structures to be constructed beyond the first five year operating period.

6. The General Information Document shall contain a description of the material to be used as daily cover:

_____ A. A description of the soil to be used, including its classification and approximate hydraulic conductivity; or

_____ B. Documentation that any proposed alternative materials or procedures to substitute for daily cover meet the minimum requirements of 35 IAC 811.106(b).

_____ 7. Legal Description(s).

_____ 8. Proof of Property Ownership Certification.

VI. The following documents are required to be included as part of this application. List any additional information.

1. General Information Document (Refer to LPC-PA2 instructions)

2. Inert Waste Landfill Documents (Refer to Appendix A)

   A. Determination

   B. Design Report

   C. Closure Plan

3. Chemical and Putrescible Waste Landfill Documents

   A. Location Requirements (Appendix B)

   B. Groundwater Protection Evaluation (Appendix C)

   C. Design Description (Appendix D)

   D. Construction Report (Appendix E)

   E. Closure Plan and Post-Closure Care Plan (Appendix F)

   F. Operating and Reporting Plan (Appendix G)

   Others

4. _____

5. _____

Consult the Instructions for Appendices A, B, C, D, E, F, and G for the type of information needed to be included in each document or report.

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State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

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# APPENDIX A TO LPC-PA2

## INSTRUCTIONS FOR PREPARING AN APPLICATION FOR AN INERT WASTE LANDFILL

This Appendix sets out the type of information needed in addition to the general information requested in the LPC-PA2 Instructions. You should review Appendices A-G and Section VI of LPC-PA2 form to determine which are applicable to your facility. This Appendix explains the requirements in 35 IAC 811 Subpart B for inert waste landfills.

I. Inert Waste Determination

A. Waste Description

1. The applicant shall demonstrate that his waste will not decompose biologically, burn, serve as a food for vectors, form a gas, cause odor or form a contaminated leachate.

2. The applicant shall provide a written description of the waste characteristics that demonstrates that the waste is inert.

B. Leachate Analysis

Laboratory analysis must be provided demonstrating that the waste does not produce a contaminated leachate. That is, none of the constituents of the leachate may exceed the public and food processing water standards described in 35 IAC, Subtitle C, 302.301, 302.304 and 302.305 and the Class I groundwater standards of 35 IAC, Subtitle G, 620. In making this demonstration, either leachate produced in the field or the lab may be used (see 35 IAC, 811.202(b) and (c)). The laboratory procedure ASTM D3987 or equivalent may be used if it is believed to represent actual conditions.

II. Design Considerations

A. Design Period

Provide the design period of all waste disposal units pursuant to 35 IAC 811.203. The design period is defined as the facility operating life plus five (5) years but not to be less than fifteen years.

B. Final Cover System

For the design of the final cover system, pursuant to 35 IAC 811.204, see "Closure Plan and Postclosure Care Plan" for Inert Waste Landfills, Item III(A)(9)(c).

C. Final Slope and Stabilization

For the design of the final slopes and a demonstration that the waste disposal unit shall be designed and constructed in accordance with 35 IAC 811.205, see "Closure Plan and Postclosure Care Plan" for Inert Waste Landfills, Item III(A)(9)(a) and (b).

D. Leachate Sampling

The following information must be included in a leachate sampling plan in conformance with 35 IAC, 811.206:

1. Monitoring System Design

   a. A scale map(s) (1" = 200′ or greater) showing the location of the monitoring system intended to collect samples of leachate;

   b. A description of the methods to collect the samples of leachate;

   c. The design of all collection devices and of all monitoring points;

   d. A demonstration that the monitoring system, collection methods and devices are capable of collecting the most representative and undiluted samples of leachate generated by the facility.

2. Leachate Monitoring Reports

   a. Describe the procedure to collect and analyze leachate samples once every six months, including:

      i. A laboratory test procedure in accordance with 35 IAC, 811.202 and the Inert Waste determination;

      ii. A statistical procedure for evaluating leachate data pursuant to 35 IAC, 811.320(e);

      iii. A test method to determine if the leachate is a contaminated leachate pursuant to 35 IAC, 811.202;

      iv. A description of the notification procedure pursuant to 35 IAC, 811.206(d) if the leachate is found to be contaminated;

      v. A plan describing, if the facility is found to be generating a contaminated leachate, how the facility shall comply with the design requirements and performance standards for Putrescible and Chemical Waste Landfills as set forth in 35 Ill. Admin Code, Part 811, Subpart C, including closure and remedial action.

   b. Describe the procedure to collect and analyze leachate samples once every two years and tested for the presence of organic chemicals pursuant to 35 IAC, 811.319(a)(3), including:

      i. A laboratory test procedure in accordance with 35 IAC, 811.202 and the Inert Waste Determination;

      ii. A statistical procedure for evaluating leachate data pursuant to 35 IAC, 811.320(e);

iii. A test method to determine if the leachate contains organic chemicals in accordance with, 35 IAC 811.319(a)(3);

iv. A description of the notification procedure pursuant to 35 IAC, 811.206(c) if the leachate is found to contain organic chemicals.

c. A schedule for submitting the chemical analysis tests requested in Part II D 2 above to the Agency in accordance with 35 IAC, 813.502.

E. Load Checking

The following information must be included in a load check plan in conformance with 35 IAC, 811.207:

1. A procedure by which all waste loads entering the facility are accompanied by documentation and certification by a representative of the generator that the waste is an inert waste and has been tested in accordance with the requirements of 35 IAC, 811.202.

2. A description of a random load checking program which complies with the requirements of 35 IAC, 811.323 and also contains a procedure to:

a. detect and discourage attempts to dispose non-inert wastes at the landfill;

b. requires the facility's inspector to examine at least one random load of solid waste delivered to the landfill on a random day each week; and

c. requires the operator to test one randomly selected waste sample in accordance with 35 IAC 811.202(a) and (b) to determine if the waste is inert.

F. Construction Quality Assurance

The application of final cover and construction of ponds, ditches, lagoons and berms are subject the requirements of Subpart E: Construction Quality Assurance Programs. Refer to Appendix E of the instructions to determine the information necessary to comply with these requirements for these type of structures. Attach your construction document to this report.

III. Closure Plan and Post Closure Care Plans for Inert Waste Landfills

A. The closure plan must at a minimum include the following:

1. A map showing the configuration of the facility after closure of all units, with the following:

a. The contours of the proposed final topography (after placement of the final cover) of all disturbed areas and showing how the final contours blend with the surrounding topography;

b. A scale no smaller than 1" = 200 and a contour interval of two feet; and

c. The location of all facility-related structures to remain as permanent features after closure;

2. Identification of the "assumed closure date" (i.e. the date during the next permit term on which the costs of premature final closure of the facility will be greatest);

3. Steps necessary for the premature final closure of the site at the assumed closure date;

4. Steps necessary for the final closure of the site at the end of its intended operating life;

5. Steps necessary to prevent damage to the environment during temporary suspension of waste acceptance. (This is necessary only if the operator wants a permit which would allow temporary suspension of waste acceptance at the site without initiating final closure);

6. A description of the steps necessary to decontaminate equipment during closure;

7. An estimate of the expected year of closure;

8. Schedules for the premature and final closure, which shall include, at a minimum:

   a. Total time required to close the site; and

   b. Time required for closure activities which will allow tracking of the progress of closure; and

9. A description of methods for compliance with all closure requirements of 35 IAC 811 appliable to the facility. This will necessitate the following information:

   a. A demonstration (i.e., calculations) that the final slope will have a Static Safety Factor of at least 1.5 and a Seismic Safety Factor of at least 1.3 throughout the design period.

   b. A demonstration that the proposed vegetation and other surface stabilization procedures meet the following standards:

      i. Vegetation shall be compatible with (i.e. grow and survive under) the local climatic conditions;

      ii. Vegetation shall require little maintenance;

      iii. Vegetation shall consist of a diverse mix of native and introduced species consistent with the post-closure land use; and

iv. Temporary erosion control measures, including, but not limited to, the application, alone or in combination, of mulch, straw, netting, or chemical soil stabilizers, shall be undertaken while vegetation is being established.

c. The following information must be provided regarding final cover:

i. Specification of the thickness of the final cover (minimum: 3 feet);

ii. A description of the soil including a demonstration that it can support the proposed vegetation;

iii. Identification of the source of final cover and a demonstration that the proposed source contains an adequate volume of suitable soil; and

iv. A sampling program based on statistical sampling techniques which establishes criteria for acceptance or rejection of materials, and the construction operations to be used in the construction quality assurance program.

d. Calculations demonstrating that all drainage control structures have been designed to accommodate runoff from a 100 year, 24-hour precipitation event without scouring or erosion.

B. The "Postclosure Care Plan" must, at a minimum, include the following:

1. Descriptions of the inspection and monitoring schedules, the inspections themselves, and the quantitative criteria for performing maintenance for the final cover.

2. Criteria for reducing the frequency of inspection of the final cover.

3. Criteria for ceasing to inspect the final cover.

NOTE: If any of the postclosure care information is contained in other reports submitted with this Application it may be included in the postclosure care plan by reference.

C. The following information regarding cost estimates must be provided:

1. Closure Cost

a. The itemized cost of applying final cover to the entire area that will be filled during the period starting at the beginning of the permit term and ending on the assumed closure date.

b. The cost of construction an adequate drainage control system.

c. The cost of equipment decontamination.

d. The cost of certification of closure.

2. Post Closure Care Cost

   a. The itemized cost of carrying out all of the activities described in the postclosure care plan.

   b. Calculations determining the present value of providing postclosure care based on the following assumptions:

      i. Landfill operations will cease on the assumed closure date.

      ii. Postclosure care shall continue throughout the remainder of the design period with no reduction in the frequency or stringency of any postclosure care activity, except as allowed by 35 IAC 811.111(c)(1)(a).

      iii. The discount rate shall be 4 percent per annum and that there shall be no inflation.

3. Sum of the closure cost plus the present value of the post-closure cost.

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# APPENDIX B TO LPC-PA2

## INSTRUCTIONS FOR DEMONSTRATING LOCATION STANDARDS FOR CHEMICAL AND PUTRESCRIBLE WASTE LANDFILL

This Appendix sets out the type of information needed in addition to the general information requested in the LPC-PA2 Instructions. You should review Appendices A-G and Section VI of LPC-PA-2 form to determine which are applicable to your facility. This Appendix explains the requirements in 35 IAC 811.302.

I. Facility Location Map*

On a map (or maps) with a scale no smaller than 1 inch = 1,000 feet show all of the features required by 35 Ill. Adm. Code 812.303(a), which exist within 1 mile of the facility

*Note: The Facility Location Map, required by 35 Ill. Adm. Code 812.303(a), is different than the Site Location Map, required by 35 Ill. Adm. Code 812.107. Thus, the facility location features should be shown on a separate map (or set of maps).

II. Documentation On Facility Location

Documentation including narratives must be provided which in conjunction with the Facility Location Map demonstrate that the following location standards described in 35 Ill. Adm. Code 811.303(b) will not be violated.

A. That no part of the unit is located within 1,000 ft. of a public well as established pursuant to Section 14.2 or 14.3 of the Act. (You may contact the Division of Public Water Supplies for well location information at 217/785-8653.)

B. That no part of the unit is located within the recharge zone of a sole-source aquifer.

C. That either no part of the unit is located within 1,200 feet of a sole-source aquifer described by 35 IAC 811.302(b) or that a confining stratum meeting the minimum requirements of 35 IAC 811.301(b) is present beneath the unit.

D. How any part of the facility located within 500 feet of the right of way of a township or county road or state or interstate highway has its operations screened from view by a barrier of natural objects, fences, barricades, or plants no less than 8 feet in height.

E. That no part of a unit is located closer than 500 feet from an occupied dwelling, school, or hospital that was occupied on the date when the operator first applied for a permit to develop the unit or the facility containing the

unit, unless the owner of such dwelling, school, or hospital provides permission to the operator, in writing, for closer distance. Permission statements must include:

1. The name of the owner of building giving permission

2. The name of the operator requesting permission

3. The date the owner occupies the building

4. The date the operator first applied for permit to develop the unit or facility containing the unit

5. The new minimum distance that the approval is being granted for

6. The typewritten name and signature of the person granting permission

F. That the facility is not located closer than 5,000 feet of any runway used by piston type aircraft or within 10,000 feet of any runway used by turbojet aircraft unless the Federal Aviation Administration provides the operator with written permission, including technical justification, for a closer distance.

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# APPENDIX C TO LPC-PA2

## INSTRUCTIONS FOR THE GROUNDWATER PROTECTION EVALUATION FOR PUTRESCIBLE AND CHEMICAL WASTE LANDFILLS (rev. 10/21/92)

This Appendix sets out the type of information needed in addition to the general information requested in the LPC-PA2 Instructions. You should review Appendices A-G and Section VI of LPC-PA2 form to determine which are applicable to your facility. This Appendix explains the information required for the GROUNDWATER PROTECTION EVALUATION which shall describe the hydrogeologic site investigation, groundwater impact assessment, groundwater monitoring systems, and groundwater quality standards of the site.

### I. HYDROGEOLOGIC SITE INVESTIGATIONS

The information compiled during the hydrogeologic investigation provides the foundation of data on which the monitoring system, groundwater impact assessment and groundwater quality standards are developed. Therefore, before starting the investigation, a field implementation plan should be developed which includes a schedule of implementation, a system for the collection and management of data, quality control and contingency planning for acceptable alternatives to preferred methods, practices or equipment. Reports to the Agency upon completion of each phase of the investigation are not necessary.

The study shall include the entire area occupied by the facility and any adjacent areas, if necessary for the purposes of the hydrogeologic investigation. [Section 811.315(b)(2)]

All borings should be continuously sampled. However, where a sufficient number of continuously sampled borings are drilled to document the continuity of a unit or formation, additional borings which are not continuously sampled are acceptable pursuant to 811.315(b)(3).

#### A. Phase One

The first phase consists of a literature survey and establishment of the regional geologic and hydrogeologic characteristics. A minimum of one continuously sampled boring near the geographic center of the site is required to confirm the literature evaluation. The borings must extend at least 50 feet (15.2 meters) below the bottom of the uppermost aquifer or through the confining layer below the bottom of the uppermost aquifer, or to bedrock, if the bedrock is below the uppermost aquifer, whichever elevation is higher.

The Agency realizes that in parts of the State, this may require boring 300 to 500 feet below ground surface to fulfill the minimum requirement of Phase I when the uppermost aquifer is a considerable thickness. Section 811.315(f) allows the Agency to consider alternate ways of collecting the hydrogeologic site information provided that the information is collected in a manner equal or superior to the requirements of this Section. Considering the purpose of the hydrogeologic investigation (i.e., to provide information to perform a

groundwater impact assessment and establish a groundwater monitoring system), boring to excessive depths on site would yield data of limited use at extraordinary expense. For these extreme field conditions, the Agency recommends the following:

> If the bedrock is part of or below the uppermost aquifer, borings through the entire thickness of the bedrock will not be required if supporting documentation such as that required in 811.315(c)(2)(A) can be correlated with the site data. However the borings must characterize the permeable portion of the bedrock, (usually described as being weathered, vuggy, desiccated or fractured, etc.) and include coring a minimum of 15 to 20 feet of the bedrock. Similar logic can be applied to characterizing the uppermost aquifer and confining layer when the former is a considerable thickness of unconsolidated material. The borings must extend at least 100′ into the uppermost aquifer and correlate with the supporting documentation in 811.315(c)(2)(A).

A complete search of the published documents and a request for preliminary site information from the Illinois State Geologic Survey and/or State Water Survey at a minimum is also required. This should be followed by a sufficient number of preliminary borings to evaluate the proposed site and define the study area.

[ADD ILLUSTRATIONS not yet available]

B. Phase Two

The second phase consists of exploratory borings drilled at the site to establish the stratigraphy and general groundwater characteristics. A complex or unpredictable site may require a large number of borings to confirm the stratigraphic information. These borings and soil sampling techniques must comply with the procedures from the American Society for Testing and Materials (ASTM) standards D1586 (split-barrel), D1587 (thin walled tube), and D2113 (diamond core drilling) or an equivalent procedure. The information required in the investigation includes the structural, chemical, physical properties and classification of the subsurface materials in accordance with the United Soil Classification System (USCS).

Phase two requirements for the site-specific geologic and hydrogeologic information include hydraulic conductivities, extent of aquifers and the direction and velocities of groundwater movement as determined by field methods. An investigation of the subsurface conditions over the entire site should be conducted to determine the structural and lithologic characteristics of the site. Use of a site grid pattern to initially determine the boring locations is strongly recommended. The number of borings should be adequate to represent the variability in subsurface characteristics at the proposed site. No less than 20 borings per site will be acceptable when in a simple geologic setting. Additional borings will be required in areas of complex or transitional stratigraphy. Not all of the borings are required to penetrate the entire depth of the uppermost aquifer, but a sufficient number of the borings should be conducted to demonstrate the continuity or discontinuity of the uppermost

aquifer and confining layer beneath the site. Wells should be located near each corner of the study area. Additional wells may be located at intermediate points within the study area to determine the hydrogeologic characteristics of the study area. Section 811.315(b)(2) requires hydrogeologic investigation of areas adjacent to but outside of the area occupied by the facility, if necessary.

All borings must be properly plugged upon abandonment of the borehole and the procedures used should be carefully documented. In addition to the requirements of Section 811.316, all borings (i.e. drill holes) and wells shall be plugged and abandoned in accordance with current Agency procedures and applicable sections of the Department of Public Health (DPH) requirements given at 35 IAC Part 920 Illinois Water Well construction code (1/92). See Part IV of these instructions for well/piezometer construction and abandonment requirements.

C. Phase Three

The third phase includes gathering information to confirm the initial information and to validate the characterization of all known hydrogeologic units by actual field tests. The information required in this part includes identification of zones with high hydraulic conductivity, potential pathways for contaminant migration, final identification of aquifers and their confining layers, identification of any variations in groundwater quality and flow, and identification of any unusual features which may affect hydrogeologic systems. Piezometers should be installed in each hydrogeologic unit to allow testing by the use of rising or falling head techniques and pump tests. Monitoring wells should be installed in each hydrogeologic unit to begin sampling to establish the applicable groundwater quality standards for the site.

A narrative description of the site geology should be prepared which includes a detailed description of each geologic unit found within the study area, including physical and geochemical properties and a description of all water bearing strata within the study area including potentiometric maps, groundwater flow velocities, gradients, and directions.

The application should include geologic cross sections of the permit area illustrating all water bearing strata, water elevations, uppermost aquifer, confining units and all discernable geologic formations.

Documentation of all activities and supporting references should be contained in the permit application. Data should be presented in summary form such as tables and graphs with the row data organized and presented in appendices.

The hydrogeologic site investigation within the application should include, but is not limited to:

* Climatic Conditions
* Regional Geology
* Regional Groundwater

* Structural Characteristics
* Chemical and Physical Properties of Strata
* Soil Characteristics
* Hydraulic Conductivities
* Vertical Extent of Aquifers
* Direction and Rate of Groundwater Flow
* Characterization of Potential Pathways
* Hydrodynamic Dispersion
* Correlation of Stratigraphic Units
* Petrographic Features
* Identification of Zones with
* High Hydraulic Conductivity
* Concentrations of Chemical Constituents In the Groundwater Below the Unit
* Characterization of Variations in the Groundwater Quality and Flow
* Identification of Unusual Features

D. General Comments

A general three-phase investigation is suggested but, in order to allow for flexibility in conducting the studies, a performance standard was developed as Section 811.315(f) allowing the applicant to select an alternative approach. However, the information must be collected in a systematic manner that is equal to or superior to the investigation procedures discussed in this section.

II. GROUNDWATER QUALITY

The owner or operator is required to determine groundwater quality spatially throughout the "uppermost aquifer" within the study area; characterize the seasonal and temporal, naturally and artificially induced variations in groundwater quality; include in the application an evaluation of the background concentrations; and identify each constituent monitored. Proper identification of the "Uppermost Aquifer" is therefore essential before proceeding with the installation of a groundwater quality monitoring system.

A. Uppermost Aquifer

"Aquifers" as defined in Part 810 means saturated (with groundwater) soils and geologic materials which are sufficiently permeable to readily yield economically useful quantities of water to wells, springs, or streams under ordinary hydraulic gradients and whose boundaries can be identified and mapped from hydrogeologic data. [Section 3(b) of the Illinois Groundwater Protection Act (Ill. Rev. Stat. 1989, ch. 111 1/2, par. 7453).]

The "Uppermost Aquifer" means the first geologic formation above or below the bottom elevation of a constructed liner, or waste where no liner is present, which is an aquifer, and includes any lower aquifer that is hydraulically connected with this aquifer within the facility's permit area.

Groundwater within the uppermost aquifer must be classified as Class I, II, III or IV by the owner or operator in accordance with the criteria of 35 IAC Part 620.

The identification of the hydrogeologic conditions within the study area are essential to the definition of uppermost aquifer. Distinctions between the hydraulic properties of the units shall be supported by insitu testing as required during Phases 2 and 3 of the hydrogeologic investigation.

B. Establishment of the Applicable Groundwater Quality Standards

The applicable groundwater quality standards for the facility are the background concentrations determined for each parameter pursuant to 811.320(d).

The background concentrations shall be based on the chemical analysis of groundwater samples taken from an appropriate number of wells within the study area at least quarterly for one year, resulting in a minimum of 4 samples per parameter per well. The main objective of gathering background is to determine existing groundwater quality throughout the uppermost aquifer upgradient and below the unit. It is not required that <u>all</u> test wells be utilized to achieve this goal, however a multi-level monitoring system is usually necessary. Variations in background groundwater quality shall be determined within the three dimensional limits of the study area. The background groundwater parameter list is determined by the following criteria and are given in Attachment 1 to this Appendix:

1. The parameter is a constituent or is expected to be a constituent of the leachate and the Illinois Pollution Control Board has established a standard for the constituent [see Sections 811.315(e)(1)(G)(i), 811.319(a)(2)(A) and 811.319(a)(3)(A)(ii)]; or

2. The parameter is included on the list of 51 organic chemicals in drinking water described at 40 CFR 141.40; or

3. Any other constituent which is expected to be in the leachate, that may cause or contribute to groundwater contamination [see Sections 811.315(e)(1)(G)(ii) and 811.319(a)(2)(A)(ii)].

Any parameter <u>not</u> specifically listed in 2 may be excluded if a justification of why it is not expected to be present in the leachate is provided. The justification should include the information from leachate testing as described in part III.A.6. of these instructions.

Statistical tests and procedures shall be employed to establish the background concentrations. Specific requirements for choosing the statistical tests are included in Section 811.320(e). The data needs for the statistical methods considered must be determined and incorporated into the sampling schedule before sampling begins. For statistical purposes, the recommended minimum number of pieces of data for naturally occurring constituents is twenty (20) values. An equal number of samples must be taken from each well to ensure equal weighting. The minimum

number of pieces of data for non-naturally occurring constituents is four (4) values assuming they are not detected during the background monitoring period. However for any non-naturally occurring constituent detected, additional analyses is necessary to establish the background concentration for that constituent.

The operator must submit a list of the background concentrations and the applicable groundwater standards for the site with the permit application and provide updates to the Agency within 10 days of any change to the list thereafter.

If the background concentration for a groundwater constituent exceeds a "Board established standard" as defined in 811.320(a)(3)(B) an adjusted groundwater quality standard is not required. The background concentration is the applicable standard. However, if the owner or operator determines an adjusted groundwater quality standard is appropriate for a constituent, for example in lieu of the established background, the adjusted standard shall be included in the permit application with documentation of the Board decision.

C. Groundwater Monitoring Wells for the Establishment of Background

Monitoring wells should only be installed with proper design, materials, quality control, and sufficient understanding of the geologic and hydrogeologic conditions present on site. See Part IV of these instructions for well construction and abandonment requirements.

Specific requirements include piezometers and groundwater monitoring wells installed in all strata and extending down to the bottom of the uppermost aquifer. Wells should be located near each corner of the study area and near the site boundary in the area of upgradient groundwater flow. The number of sampling points required for establishing background is dependent on the geologic and geochemical complexity of the study area.

D. Sample Collection

Monitoring groundwater quality is a difficult task because of the complex interaction of many factors including site hydrogeology, well construction, sampling materials and methods. Monitoring programs must be designed in such a manner that sources of error or bias are minimized or controlled. A monitoring program must include a carefully designed plan, appropriate sampling protocol, applicable chemical parameters and data evaluation techniques.

The sampling protocol includes methods of development and purging and determination of optimum purge volume. Because the response of a well is controlled by transmissivity of the geologic materials near the well and by the design of the well, each well must be analyzed individually to determine the optimum number of well volumes that must be removed to obtain representative samples prior to sampling. Low-yield wells must be evacuated to dryness once, then as the well recovers measure sample pH, temperature, and specific conductance, followed by collection of samples in the order of most volatile first, followed by the remaining organics, metals, etc.

Samples shall be analyzed for both the dissolved and total concentrations of inorganic parameters during the initial background sampling period. General practice for dissolved concentrations is field filtering prior to preservation through a 0.45 micron membrane filter. The difference between total and dissolved concentrations may vary due to well construction, sampling procedures or natural physical or geochemical processes occurring in the aquifer. If the difference between total and dissolved metals is greater than one magnitude, then both analyses may be required individually for routine monitoring after the establishment of background concentrations. Groundwater quality standards are generally based on total concentrations. Therefore when comparing to a numerical standard, analytical results from unfiltered (total) samples should be used.

## III. GROUNDWATER IMPACT ASSESSMENT

The purpose of the groundwater impact assessment is to provide an integrated evaluation of the acceptability of the physical setting and design of the landfill units through contaminant transport modeling. The impacts of leachate seepage from the unit must be addressed (i.e., modeled) in a systematic fashion using the techniques described in 35 IAC 811.317 and 812.316.

A written evaluation and analysis of the results of the groundwater impact assessment must be submitted with the permit application. Every application requiring a groundwater impact assessment should include a report addressing the following issues:

### A. Groundwater Impact Assessment

This portion of the instructions provides a systematic method to assess the impacts of leachate seepage from the unit, as referenced under 35 IAC 811.317. This is essentially an outline of the modeling process presented as an organized sequence of events, along with a brief description of what the Agency is looking for under each outline topic. Applications that follow this format will facilitate Agency review of the application.

#### 1. Conceptual Model

The conceptual model used to simulate contaminant transport at the facility should be described in the groundwater impact assessment portion of the Groundwater Protection Evaluation report. This should include both a diagramatic representation of the hydrogeologic setting being modeled, and a narrative description of the concepts or processes of contaminant transport used to assess the impacts of leakage from the unit accounted for in the model.

The diagramatic representation of the facility should present the hydrogeologic setting in a simplified form, as it will be viewed by the model, versus the more complex features of the site that may have been discovered during the hydrogeologic site investigations but which are not accounted for in the model.

The narrative description of the conceptual model should elaborate on the simplifications inherent in modeling the site (e.g., how the hydrogeologic setting can be represented in this simplified manner and still adequately assess the impacts of leakage from the unit).

The narrative description should also discuss and describe the transport processes that are considered as leachate constituents move through each of the hydrogeologic units considered in the model.

This section of the report should allow the Agency reviewer an understanding of exactly which transport processes and site conditions were considered in the model and how these were modeled. It should be readily apparent to the Agency reviewer that the facility is adequately represented in the model and that releases from unit(s) will be adequately simulated.

2. Translation to Mathematical Model

The conceptual model should be translated into a mathematical model, expressed in the same terms as those presented in the transport model user's guide and/or associated model documentation. This should include equations for each transport process under consideration. These equations should then be coupled into the full mathematical model that will be used to simulate contaminant transport at the facility.

From this point, the Agency reviewer should be able to use the documentation provided with the model to assess the theoretical basis of those equations (see instructions regarding model documentation below). Any modifications or deviations from the generic expression(s) of these equations, as presented in the model documentation, that may be needed for site-specific application of the model should be fully explained and theoretically justified.

3. Model Input Values

The report should provide a narrative description of how model input values (e.g., dispersivities, leachate concentrations, hydraulic conductivities, etc.) were obtained, their applicability to conditions at the proposed site, and an assessment of any uncertainty in the selection of those values. If confidence in the selection of a parameter value is low, particularly for those parameters to which the model is sensitive, conservative values must be used for model input.

4. Seepage from the Unit

The procedures for performing the groundwater impact assessment require the operator to estimate the amount of seepage from the unit using the minimum design standards for slope configuration, cover, liner, leachate drainage and leachate collection, and assuming that the actual design standards planned for the unit apply. For example, if the actual design of the landfill includes leachate

withdrawal during the active life and during the entire 100 year period following closure, this can be accounted for in estimates of seepage from the unit.

[Note: Additional financial assurance for leachate collection beyond the minimum design period would be required under the example given above.]

5. Site-Specific Values

Site-specific data should be used for model input whenever possible. Hydrogeologic site investigations should provide most of the input data required for contaminant transport modeling. Sampling strategies should be designed to obtain estimates of both the magnitude and variability of site hydrogeologic characteristics and landfill data.

If it is not practical to obtain site-specific data during the hydrogeologic site investigations, the Agency will consider use of other data for model input. The validity of any model input parameter values which are not based on site-specific data must be well documented. Sensitivity analyses must be performed on these parameters. In this case, site-specific data will not be required, provided that the applicant selects reasonably conservative values for model input (i.e., conservative in the sense that the values used generate the greatest predicted contaminant concentrations at or beyond the limit of the zone of attenuation). The conservative nature of the selected value must be demonstrated by the sensitivity analysis. However, if the applicant does not wish to use a reasonably conservative value in the baseline model, then the selected value for that parameter must be based on site-specific data.

6. Leachate Constituents and Concentrations

The concentrations of chemical constituents in leachate to be used as inputs in modeling and in performing the groundwater impact assessment need to reflect the relatively conservative estimates of concentrations expected at the specific facility during the design period. These may be developed in any of the following three ways:

a. Testing leachate from an existing landfill;

   i. The samples should be from the subject landfill or from a landfill which would be analogus with regards to expected leachate generation.

   ii. The landfill must be sampled to accurately reflect the expected leachate quality, accounting for both spatial and temporal variability (i.e., location in the landfill, the types of waste placed there, and the age of the leachate). Conservative leachate quality estimates for model input values may be calculated using the average of the leachate sampling results for a given constituent.

However the method of calculation must account for the full range of concentrations detected for each constituent. The same statistical approach used for calculating the background groundwater concentrations should be used to calculate the leachate input values. For instance the mean plus two standard deviations or an upper confidence limit is acceptable if justified.

iii. Testing of actual leachate or synthetic leachate in (b) below must include at a minimum all of those parameters listed in Attachment 1 as expected to be in leachate. Again, the concentrations to be used as inputs shall be calculated with the goal of evaluating the greatest concentrations expected during the life of the landfill. Landfills which do not receive municipal waste must consider actual types of waste received and the expected resultant leachate.

b. Testing a "Synthetic Leachate" (i.e., laboratory derived extract of a representative sample of the waste expected to be disposed in the proposed unit). Once again the overall estimate should consider the greatest expected concentration of each parameter during the design period; or

c. Using the values shown in Attachment 1 (pages A-1.1 through A-1.3) of Appendix C (Note: in instances where the proposed unit is not analogus to the landfills from which the values were derived (municipal waste landfills), the Agency may require adjustments to the concentrations and the parameter list.

Note: If actual sampling data show less strength for any parameter shown in Attachment 1 an explanation of why it is expected to be less at the facility being permitted should be included.

7. Surrogate Modeling

Every chemical constituent expected to be present in leachate must be modeled in the groundwater impact assessment. However, surrogate models representing groups of leachate constituents may be used in lieu of modeling each leachate constituent individually. The following procedure should be used if the applicant wishes to conduct surrogate modeling for a given group of leachate constituents:

a. Make a list of the group of leachate constituents to be represented in the surrogate model.

b. Tabulate all of the chemical data required for model input for each of those leachate constituents (e.g., leachate concentrations, partitioning coefficients, etc). This table should also include the groundwater standard for each of the leachate constituents to be represented by the surrogate model.

c. Select the most conservative value for each input parameter, from the entire table of values, for use in the surrogate model. The conservative nature of that value must be supported by sensitivity analysis.

d. Using this data, run the surrogate model just as if it were an individual leachate constituent and compare the results to the lowest groundwater standard in the table.

e. The groundwater impact assessment is considered acceptable for those leachate constituents represented by the surrogate model only if the lowest groundwater standard is not exceeded at or beyond the zone of attenuation at any time during the modeling period.

While the surrogate modeling approach can optimize the use of resources, the conservative nature of surrogate modeling can also make it more difficult for the applicant to demonstrate an acceptable groundwater impact assessment. Any combination of surrogate groups and/or individual leachate constituents may be used for groundwater impact assessments, depending on the needs of the applicant, as long as all leachate constituents are modeled.

8. Dispersivity

Model input parameters related to the processes of dispersion are particularly problematic in conducting groundwater impact assessments. Unfortunately, this situation is far from simple. Site-specific dispersivity tests are not routinely conducted during the hydrogeologic site investigations. Published literature values for longitudinal dispersivities show a range of over six orders of magnitude, from less than 1 mm to greater than 100 meters, with the higher dispersivity values accounting for the apparent empirical relationship between dispersion and flow distance (i.e., scaling). Furthermore, the observed scaling relationship also exhibits a high degree of variability, from about 1% to greater than 100% of the flow distance (e.g., see Neuman, 1990: Universal scaling of hydraulic conductivities and dispersivities in geologic media. Water Resources Research 26(8):1749-1758). To even further complicate this issue, different models show differing sensitivities to dispersivity parameters, in both degree and direction, and these sensitivities can change within a given model depending on how the model is applied.

Therefore, longitudinal dispersivity values used for model input may be based on site-specific dispersivity tests or on published literature values. Transverse dispersivities may be estimated as 20% of the longitudinal dispersivity value. Obviously, no single "rule-of-thumb" for selection of dispersivity values from the literature is universally applicable for all models, and, without site-specific data, the Agency has no idea what the appropriate values for model input might be. Therefore, if literature values are used to estimate dispersivity, reasonably conservative values must be selected for model input. This must be based on

sensitivity analysis conducted by the applicant. The more sensitive the model, the greater the degree of conservatism required for model input.

Some models require use of larger dispersivities (scaled dispersivites) in order to accurately simulate contaminant transport. This appears to be the case for the majority of the models used for groundwater impact assessments submitted to the Agency so far. For these types of models, additional guidance on modeling dispersivity is given below:

> If the model is not sensitive to dispersivity, a reasonably conservative value for longitudinal dispersivity could be estimated using 5% of the flow distance as the scaling factor. For example, if increasing longitudinal dispersivity over a flow distance of 200 feet decreases the maximum predicted concentration at or beyond the limit of the zone of attenuation during the modeling period, but that predicted decrease is only slight, longitudinal dispersivity may be estimated to be 10 feet. If the model is sensitive to dispersivity, selection of a value to use in the baseline model becomes that much more critical, and a reasonably conservative value for longitudinal dispersivity should then be based on the entire range of reasonable values determined by scaling. For example, if increasing longitudinal dispersivity decreases maximum predicted concentrations over a flow distance of 200 feet, a reasonably conservative value would be 2 feet.

In both of the situations described above, the longitudinal dispersivity values that would be selected fall within the actual range of apparent dispersivity values presented by Neuman (1990) and, therefore, are considered reasonable. We will also be fairly confident that using the selected dispersivity value will not underestimate the concentrations of leachate constituents in groundwater at or beyond the zone of attenuation during the modeling period.

9. Retardation

The process of retardation of leachate constituents may be considered in the groundwater impact assessment. Most contaminant transport models account for this process through the use of distribution or partitioning coefficients ($K_d$). For inorganic leachate constituents, the applicant may use $K_d$ values from literature sources as input to the model. For organic leachate constituents, $K_d$ values must be calculated according to the formula:

$$K_d = K_{oc} \times f_{oc}$$

where, $K_{oc}$ = the organic carbon partitioning coefficient

$f_{oc}$ = the organic carbon fraction of the medium

Literature values for $K_{OC}$ may be used in these calculations, but the organic carbon fraction of the medium must be based on site-specific sampling results that account for spatial variability. The horizontal and vertical variability of organic carbon content should be determined for each of the hydrogeologic units in which retardation is simulated, with equal weighting for each sampling depth. The lower 95% confidence limit of the organic carbon fraction should then be used to calculate the $K_d$ value for each organic leachate constituent using the formula given above.

10. Table of Values

Summary table(s) of all input parameter values used in the model should be provided in the Groundwater Impact Assessment Report.

A set of default parameter values (presented below) may be used to model sanitary landfill leachate constituents as an alternative to leachate sampling procedures described in Section 6 above. Model parameters with missing $K_d$ or $K_{OC}$ values should ignore the process of retardation (i.e., set the distribution coefficient equal to zero). The leachate constituents presented below may be modeled individually or in accordance with guidelines for surrogate modeling presented in Section 7 above.

The default values presented below may be used to model the effects of leakage from sanitary landfills that accept municipal waste only. Landfills accepting other types of waste must consider the actual types of waste received and the expected resultant leachate in accordance with the guidelines presented in Section 6 above.

Inorganic Leachate Constituents

| Constituent | Conc (mg/l) | $K_d$ ($cm^3/g$) |
|---|---|---|
| Sulfate | 980 | --- |
| Ammonia | 910 | --- |
| Potassium | 660 | 3.3 |
| Sodium | 1800 | --- |
| Calcium | 1725 | --- |
| Chloride | 2300 | 0 |
| Cyanide | 1.3 | --- |
| Antimony | 0.06 | --- |
| Arsenic | 0.51 | 1.8 |
| Barium | 1.56 | --- |
| Cadmium | 0.24 | 2.7 |
| Chromium | 0.3 | 4.1 |
| Copper | 0.12 | 7.4 |
| Iron | 852 | 10 |
| Lead | 0.45 | 18 |
| Magnesium | 723 | 3.3 |
| Nickel | 0.93 | --- |
| Selenium | 0.06 | 1.3 |
| Silver | 0.03 | 30 |
| Thallium | 0.04 | --- |
| Zinc | 11.67 | 6.7 |

Organic Leachate Constituents

| Constituent | Conc (mg/l) | $K_{OC}$ (ml/g) |
|---|---|---|
| Acetone | 6393 | 2.2 |
| Benzene | 46 | 83 |
| Methyl Ethyl Ketone | 7356 | 4.5 |
| Carbon Disulfide | 9 | 54 |
| Chlorobenzene | 19 | 330 |
| Chloroethane | 164 | 35 |
| Chloroform | 8 | 31 |
| 1,1-Dichloroethane | 200 | 30 |
| 1,2-Dichloroethane | 10 | 14 |
| 1,4-Dichlorobenzene | 10 | 1700 |
| 1,2-t-Dichloroethylene | 192 | 59 |
| Ethyl Benzene | 191 | 1100 |
| 2-Hexanone | 184 | 19 |
| Methylene Chloride | 1656 | 8.8 |
| 4-Methyl-2-Pentanone | 203 | --- |
| Tetrachloroethylene | 26 | 364 |
| Toluene | 981 | 300 |
| Trichloroethylene | 84 | 126 |
| Trichlorofluoromethane | 11 | 159 |
| 1,1,1-Trichloroethane | 179 | 152 |
| Vinyl Chloride | 45 | 57 |
| Xylenes | 1176 | 240 |

11. Model Calibration

The model should be calibrated to observed site-specific field conditions. Generally, it will only be practical to calibrate the model to groundwater flow conditions, particularly at new landfills, since releases to groundwater in the vicinity will not have occurred, or due to lack of knowledge of the nature of previous releases that may have occurred.

12. Sensitivity Analysis

Sensitivity analyses must be conducted to measure the response of the model to change in the values of assigned to major model input parameters, boundary conditions, specified error tolerances, and numerically assigned space and time discretions. The results of the sensitivity analyses must be presented in the groundwater impact assessment report.

Sensitivity analysis should be conducted separately for each model input parameter, boundary condition, etc., using baseline model results (i.e., results of models used to demonstrate an acceptable groundwater impact assessment) as the standard for comparison. Each sensitivity analysis should include the full range of reasonable values or model options potentially considered for use in the model. The range of values investigated should include values both greater than and less than those used in baseline models.

13. Model Reliability

This section of the application should present a narrative discussion of the reliability of the modeling results. How reliable are the results? Discussion of model reliability should include an assessment of model uncertainty, particularly with regard to selection of model input parameter values and the results of the sensitivity analyses conducted. This section should also assess the effects of any deviations from the assumptions inherent in the model (see section on model documentation below).

14. Groundwater Standards

The groundwater standards used to determine the acceptability of the groundwater impact assessment are background concentrations as determined in accordance with 35 IAC 811.320(d). Board established standards are not directly applicable unless they have been adjusted by the IPCB in accordance with requirements of 35 IAC 811.320(b).

15. Concentration vs. Time Profiles

Concentration vs. time profiles should be presented graphically for at least three points within the zone of attenuation for each leachate constituent. Surrogate modeling results may be used to represent corresponding groups of leachate constituents. The selected locations should include points of greatest predicted concentrations at the limit of the zone of attenuation, and 1/3 and 2/3 of the distance between the waste management boundary and the limit of the zone of attenuation.

16. Concentration vs. Distance Profiles

Concentration vs. distance profiles should be presented graphically for each leachate constituent modeled at five year increments covering the entire modeling period. These should be presented along a line parallel to the direction of groundwater flow that intersects the points of greatest predicted concentrations over time. The distance covered should be from the limit of the waste management boundary, to the zone of attenuation or to the point at which the predicted concentration is lower than the detection limit for that leachate constituent, whichever is greater. Surrogate modeling results may be used to represent corresponding groups of leachate constituents.

B. Groundwater Impact Assessment Report

The results of the groundwater impact assessment should be summarized and presented in a report in the application to show that it is acceptable. This should include summary tables and graphs, and well as a narrative discussion of the results. An acceptable groundwater impact assessment must demonstrate that the concentrations of leachate constituents in groundwater will be less than the applicable groundwater quality standards of Section 811.320 at any point at or beyond the limit of the zone of attenuation at any time during operation and within 100 years following closure of the unit.

Raw data must also be submitted to verify the accuracy of the data summaries. Raw data may be submitted either in hard copy or on computer disks (either 5.25" or 3.5", and high or low density floppy disks may be utilized). The application should include a clear explanation identifying what each of the raw data points represent and the units in which they are presented. Templates may be presented as an identification guide for highly repetitive data.

C. Model Selection

The selected model must be able to adequately represent and simulate groundwater flow and contaminant transport in the specific hydrogeologic setting at the proposed site, considering such features as water table vs. confined aquifer conditions, porous media vs. fracture flow, homogeneous vs. heterogeneous conditions, dispersivity characteristics, and multi-dimensional components of groundwater flow and contaminant transport.

[Note: Additional guidance on model selection can be found in USEPA's "Selection Criteria for Mathematical Models used in Exposure Assessments: Groundwater Models." EPA/600/8-88/075. Office of Health and Environmental Assessment. Washington, D.C. May 1988.]

D. Model Documentation

A contaminant transport model must be utilized in the groundwater impact assessment, in accordance with the requirements of Sections 811.317 and 812.316. Agency review of model acceptability will be gauged on a site-specific basis. Documentation must be provided to show that the selected model is capable of simulating groundwater flow and contaminant transport under the conditions identified in the hydrogeologic site investigations.

1. Software and User Support

If a commercially available model is utilized, a copy of that model along with full documentation and user support must be provided to the Agency (unless one has been previously provided) directly from the vendor as part of the application.

2. Groundwater Flow & Contaminant Transport

The applicant must submit documentation that establishes the ability of the model to represent groundwater flow and contaminant transport. This documentation should include validation and verification studies, and any history of it's previous applications. Studies published in professional journals are preferable and should be used for model documentation when possible. When using a model without a great deal of supporting documentation, a greater burden is placed on the applicant in terms of site-specific validation and/or verification of the model.

3. Equations and Numerical Solution Techniques

The applicant must provide documentation to support the validity of the equations used to simulate groundwater flow and contaminant transport, and the numerical solution techniques. Usually this type of information will be detailed in model documentation supplied from the commercial vendor, along with a copy of the software. If this is not the case, the applicant must supply this documentation with the groundwater impact assessment report. Any modifications or deviations from the generic expression(s) of these equations and solution techniques that may be needed for site-specific application of the model should be fully explained and theoretically justified.

4. Model Assumptions

The applicant should summarize the set of assumptions that are inherent in the selected model. This should also include an assessment of the applicability of these assumptions to the setting at the facility. Any deviations from these assumptions should be addressed in terms of model reliability.

E. Maximum Allowable Predicted Concentrations

Maximum allowable predicted concentrations (MAPCs) are projected concentrations of leachate constituents in the uppermost aquifer that, when exceeded within the zone of attenuation, indicate potential for exceedance of a groundwater quality standard at the limit of the zone of attenuation. The applicant must use the same calculation methods, data and assumptions used in the groundwater impact assessment to predict the concentration over time and space of all constituents chosen to be monitored in accordance with Section 811.319 at all monitoring points. The predicted values must be used to establish MAPCs for each monitoring point within the zone of attenuation. MAPCs must be developed for all constituents monitored in accordance with Section 811.319.

This assumes that the applicant has demonstrated an acceptable groundwater impact. In order to obtain predicted concentrations that, when exceeded within the zone of attenuation, would indicate future exceedance of the groundwater standard at zone of attenuation, the applicant must adjust the baseline model until the predicted concentration at the limit of the zone of attenuation just equals the groundwater standard. The manner by which this can be accomplished may vary depending on the contaminant transport model being utilized. There is no single correct method. The most generally accepted method of accomplishing this task is by altering model input to affect an increase in leakage rate. Once a model scenario that accomplishes this task has been developed, this same model should be used to establish predicted concentrations for each monitoring well located within the zone of attenuation. These will be the MAPCs for those monitoring points.

If modeling for the groundwater impact assessment fails to predict significant attenuation to occur within the zone of attenuation, then the applicant may use the established background concentrations described in Part II.A. of these instructions as MAPCs for monitoring points within

the zone of attenuation. For leachate constituents which were not detected during the background sampling period, an Agency approved method detection limit (MDL) or practical quantitation limit (PQL) will be accepted as the MAPC.

F. Updated Groundwater Impact Assessments

The applicant must conduct a new groundwater impact assessment as described above if any of the following changes in the facility or its operation will result in an increase in the probability of exceeding a groundwater standard beyond the zone of attenuation:

1. New or changed operating conditions;

2. Changes in the design and operation of the liner and leachate collection system;

3. Changes due to more accurate geological data;

4. Changes due to modified groundwater conditions due to off-site activity;

5. Changes due to leachate characteristics.

## IV. GROUNDWATER MONITORING SYSTEMS

The purpose of the groundwater monitoring system is to assess the success of the design of the facility, to confirm the results of the groundwater impact assessment over time, and to detect any discharge of contaminants from any part of a potential source. The groundwater monitoring system is the network of groundwater monitoring wells established within and at the edge of the zone of attenuation, throughout the uppermost aquifer, in accordance with Sections 811.318 and 811.319.

The initial monitoring shall commence during the hydrogeologic site investigation to establish the background concentrations and it is recommended that routine monitoring continue during the application period when a permit is issued and must continue throughout the design period. The design period includes the active phase of the operation of the unit and the post closure care period.

The monitoring system will monitor all potential sources of discharges within the facility, including all waste disposal units and leachate collection and storage systems. The wells must be located in zones identified during the investigation phase that could serve as contaminant migration pathways. The groundwater monitoring wells must be capable of yielding samples of a sufficient quantity for the completion of the required analysis.

Wells must be installed hydraulically upgradient and downgradient from the facility. All wells must be screened to access groundwater from a specific interval. The number and location of the monitoring wells is determined on a site specific basis. The Agency recommends using a hypothetical liner failure combined with the advective-dispersive calculation to determine plume dimensions to justify well spacing. The water quality will be statistically compared to the established background concentrations over time.

A. Modeling for Well Spacing

The applicant may use contaminant transport modeling to design a groundwater monitoring program, or to demonstrate the adequacy of an existing program.

1. Criterion for Acceptability

The groundwater monitoring well system should be capable of detecting a contaminant plume that exceeds the groundwater standard by the time it would reach the limit of the zone of attenuation. Contaminant transport modeling must demonstrate that the proposed monitoring system has a reasonable chance of meeting this goal.

2. Modeling Procedures

a. The modeling procedures used to assess well spacing are the same as those described above for the groundwater impact assessment, except that design failures are included in the model (i.e., the groundwater impact assessment assumes that the landfill design does not fail).

b. Attenuation within the aquifer should not be considered in the model.

c. A small areal source (e.g., 1 sq. meter), located near the downgradient boundary of the potential leachate source area, should be used to simulate the effect of a tear in a synthetic liner, or a crack or fissure in a clay liner.

d. Other reasonable failure scenarios may be used as needed to affect a significant release from the unit.

e. Once a release from the unit has been effectively simulated, a contaminant plume is defined as a specific concentration contour with a downgradient boundary at the limit of the zone of attenuation. The specific concentration used to define the plume is not consequential, as long as the plume width is defined by the same concentration.

f. Maximum allowable well spacing is then determined by the predicted width of the plume.

B. Monitor Well Construction

The application must provide detailed documentation of the monitoring well and piezometer construction. Casing and screen material must be inert to avoid contributing contamination or causing interference with the analysis of the water sample. Teflon, Stainless Steel 316, and Stainless Steel 304 are recommended as durable, corrosion-resistant materials. Since plastic (PVC) may have a significant effect on the ability to obtain a "representative" sample, the Agency only allows the use of plastic casing for piezometers or through the unsaturated zone for wells.

The well casing must have a minimum inside diameter of not less than two inches. The joints must be flush threaded and water-tight. The well casing must be straight and free of any obstructions. The wells must be screened at appropriate intervals to monitor the permeable zones encountered. The well screens must be not less than 2 feet or more than 10 feet in length. The slot size must be compatible with the grain size of the annular filter pack to prevent silting in by the surrounding formation. Screens must be continuous slot wire wound or machine cut.

Annular space along the screened section must be packed with silica sand or gravel 2 1/2 - 3 times larger than the 50% grain size of the zone being monitored. The top of the sand pack shall not extend past 2 feet above the well screen. A clean, well rounded and uniform (mainly one grain size) filter pack is preferred; however, in sand and gravel deposits where cave-ins occur, the natural sand and gravel is acceptable.

To insure that the sealing material does not interfere with the screen, the filter pack shall extend two feet above the top of the well screen. The sealing material above the filter pack must prevent the migration of fluids from the surface and between subsurface sediments. A pure bentonite seal must be installed above the filter pack and extend no less than 2 feet above the filter pack extension. Pure bentonite should be hydrated at the surface and installed from the bottom of the annular opening upward in one continuous operation using a "tremie tube" or "tremie pipe". A sealing material of expanding cement grout with 1% bentonite, by weight, added to the appropriate amount of water before being added to the cement or 5% bentonite, by volume, added to the cement before mixing with water should be used above the bentonite seal. This also should be installed using the tremie method as formerly described. No quick setting cements that contain additives will be allowed. Any bentonite used must also be free of additives.

At the surface, a concrete cap shall be installed around the protective casing. The cap shall extend below the frost zone and slope away from the well casing on the surface so that rain water will be diverted away from the well casing and bore hole. The portion of the well casing above the ground surface must be protected to minimize damage or tampering. These precautions should include a locking cap. Wells must be identified by a monitor point number, using an Agency approved designation. The location of the wells in relation to the waste management area must be located on a topographic map (scale 1"=200' or larger). This map must include county, site name, township, range, and section.

The Illinois Department of Public Health Water Well Construction Code, 77 IAC Part 920 (effective 1/1/92) contains minimum standards for groundwater monitoring wells and piezometers. The code also includes reporting well construction and decommissioning to the IDPH within specified timeframes. Alternate designs may be submitted for Agency approval in writing, prior to installation.

C. Sampling Frequency

The monitoring programs can consist of routine quarterly, biannual, and annual lists of parameters. For example, if a constituent is not

detected during the first 2 consecutive sampling events, it may be assigned to a biannual or annual monitoring list based upon the remaining possibility of its detection (i.e. transport characteristics or degradation/transformation rate). The operator shall monitor for a routine list of indicator parameters on a quarterly schedule that will provide a means for immediate detection of groundwater contamination.

D. Monitor Well Development

After the monitor well has been constructed and allowed to sit for 24 hours, the well must be adequately developed to minimize turbidity within the well and increase flow into the well. To be effective, development procedures require reversal or surges in flow to avoid bridging by particles, which is common when flow is continuous in one direction. This action can be created by using surge blocks, bailers, or pumps. An insitu test must be conducted for each monitor well to determine hydraulic conductivity near the well. The test method (i.e., slug tests, pumping tests) used, calculations and interpretations must be submitted to the Agency. The tests shall be conducted after the well is properly developed.

E. Monitor Well Plugging and Abandonment

Monitoring wells and borings, which are no longer being used, must be properly plugged/sealed and abandoned so that groundwater is protected from surface contamination and potential degradation between stratigraphic units. Procedures which have been developed for guidance in the plugging of monitoring wells are based upon geologic materials and well construction.

All open drill holes must be marked and covered until properly abandoned. Soil borings and test wells are to be plugged upon abandonment of the borehole using the procedures for monitoring wells if they penetrate a water bearing sediment. Those that do not contain water can be filled from the surface, as long as methods are used which ensure that pure cement slurry will reach the bottom of the hole. There may also be abandoned drinking water wells onsite that should be plugged because they can serve as routes for contamination.

When a well has been damaged, such as when the casing has been broken off at or below the surface, it should be bailed to remove any material that entered it before plugging is initiated. The depth of the well should be checked to detect the presence of any obstructions that may interfere with sealing. Any obstructions in the well must be retrieved and the well casing and screen removed prior to plugging. The operator is to restore the areas around the drill holes to their original condition.

Accurate records of plugging and abandonment procedures should be maintained for future reference and documentation for closure. See Part B. Monitor Well Construction in this Part.

F. Monitoring Well Construction Reports

Boring logs must be completed for all test borings and monitor wells. Also, all test boring should be continuously sampled and have the

elevations surveyed and reported in relation to Mean Sea Level (MSL) to the nearest 0.01 ft. Well completion ("as-built") diagrams which have been surveyed by a registered surveyor must be submitted to the Agency on Agency forms, as in Attachments.

A scale drawing showing monitor well and test boring locations must be submitted to the Agency. The drawing should also show buildings, roads, the site's property boundary, permitted waste boundary and currently filled area. In addition, a Cartesian coordinate grid for the site should be established, shown on the map, and all test borings and monitor wells should have coordinates surveyed and reported.

All necessary permits, licenses, and reporting regarding well construction, operation and plugging must be in accordance with the requirements of the Illinois Department of Public Health and the Illinois Department of Mines and Minerals if applicable.

## V. GROUNDWATER MONITORING PROGRAM

A groundwater monitoring program must be included in the application. The program must include a sampling and analysis plan (SAP) describing the procedures for collecting and analyzing data in accordance with Section 811.318(e). The program must also describe the parameters and frequency of sampling for each location and the evaluation method(s) of data.

### A. Parameters

For new facilities establishing background in accordance with Section 811.320(d), groundwater samples will be collected and analyzed for the parameter list given in Attachment 1 to this appendix at a minimum frequency of quarterly for one year, plus any additional parameters which may be unique to the waste handled by the facility or site conditions.

Routine parameters will be proposed by the applicant based on leachate quality in accordance with Section 811.319. The list must include the parameters represented in the contaminant transport model of the groundwater impact assessment (MAPCs). Attachment 2 to this appendix lists additional routine parameters.

The analytical method or methods must be cited for each parameter listed.

### B. Sampling Frequency

Routine parameters will be sampled and analyzed quarterly. Once a permit is issued, the list of parameters used for establishing background concentrations (Attachment 1) will be sampled and analyzed at least once every two years until leachate is generated, then annually thereafter.

### C. Quality Assurance/Quality Control (QA/QC)

A sufficient number of QA/QC samples will be prepared for evaluating field, transport and laboratory procedures. The samples such as

equipment, trip and lab blanks must be fully described in the facility sampling and analysis plan. The Agency recommends QA/QC for groundwater sampling and analysis as described in SW846.

D. Statistics

All groundwater sample results will be evaluated to determine if an increase in a constituent has occurred in accordance with Section 811.319(a)(4). Statistical methods must meet the minimum standards of Section 811.320(e). The Agency is providing a statistical method of general applicability for normally distributed data as Attachment 3.

E. Groundwater Quality Reporting

Groundwater data will be reported in a format prescribed by the Agency within the following time periods:

| Sampling Quarter | Report Due Date |
|---|---|
| January-February (1st) | April 15 |
| April-May (2nd) | July 15 |
| July-August (3rd) | October 15 |
| October-November (4th) | January 15 |

Statistical data need not be reported unless there is a change to the established background concentrations (811.320(d)) or a significant increase identified as described in D above has occurred. All QA/QC sample data must be reported for each sampling event.

VI. ELECTRONIC REPORTING OF DATA

The Agency is currently developing a means to accept permit information and routine monitoring data electronically using CAD software and the newly introduced GRITS software developed by the USEPA. The GRITS software is expected to be published as public domain in November or December of 1992.

References


1. Scientific/Technical Section, 1990, Response to Additional Comments on proposed Part 807, and 810 through 815, Illinois Pollution Control Board.

2. ASTM, 1990, Design and Installation of Ground Water Monitoring Wells in Aquifers, Designation: D 5092-90.

3. USEPA, 1991, "Handbook of Suggested Practices for the Design and Installation of Groundwater Monitoring Wells", EPA/600/4-89/034, Office of Research and Development, Washington DC.

4. IEPA, 1991, Groundwater Quality Standards, 35 Ill. Adm. Code 620, R89-14 (Rulemaking), Proposed Rule, Second Notice, Illinois Pollution Control Board.

5. USEPA, 1986, "RCRA Groundwater Monitoring Technical Enforcement Guidance Document (TEGD)", OSWER-9950.1.

6. USEPA, 1986, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA Publication SW846 (Third Edition and updates), Document number PB89-148076.

Attachment 1 to Appendix C
Chemical Parameters Associated with Putrescible and Chemical Landfills

| Parameters | Generally Predicted Values for Municipal Solid Waste Landfills* ug/l | Surrogate Model Value | Basis for Inclusion on List: Expected in Leachate | 35 IAC Part 620 | 35 IAC Part 302 | 40 CFR 141.40 |
|---|---|---|---|---|---|---|
| 1,1,1,2-tetrachloroethane | | | | | | X |
| 1,1,1-trichloroethane | 2,000 | | X | | | |
| 1,1,2,2-tetrachloroethane | 400 | | X | X | | |
| 1,1,2-trichloroethane | 630 | | X | | | |
| 1,1-dichloroethane | 3,000 | | X | | | X |
| 1,1-dichloroethene (or ethylene) | | | | X | | |
| 1,1-dichloropropene | | | | | | X |
| 1,2,3-trichlorobenzene | | | | | | X |
| 1,2,3-trichloropropane | 500 | | X | X | | X |
| 1,2,4-trichlorobenzene | | | | | | X |
| 1,2,4-trimethylbenzene | | | | | | X |
| 1,2-dibromo-3-chloropropane | | | | | | X |
| 1,2-dichloroethylene (or ethene) | | | | | | |
| cis-1,2-dichloroethylene | 500 | | X | X | X | |
| trans-1,2-dichloroethylene | 1,000 | | X | X | X | |
| 1,2-dichloroethane | 4,000 | | X | X | | |
| 1,2-dichloropropane | 200 | | X | X | | X |
| 1,3,5-trimethylbenzene | | | | | | X |
| 1,3-dichloropropane | | | | | | X |
| 1,3-dichloropropene | | | | | | X |
| cis-1,3-dichloropropene | | | | | | |
| trans-1,3-dichloropropene | | | | | | |
| 1,4-dichloro-2-butane | | | | | | |
| 1,4-diflurobenzene | | | | | | |
| 2,2-dichloropropane | | | | | | X |
| 2,4,5-tp (silvex) | | | | X | X | |
| 2,4-dichlorophenoxyacetic acid (2,4-D) | | | | X | X | |
| 2,4-dimethyl phenol | 30 | | X | | | |
| 1-butanol phenol | 400 | | X | | | |
| 1-propanol | 200,000 | | X | | | |
| 2-butanone (methyl ethyl ketone) | 8,000 | | X | | | |
| 2-chloroethyl vinyl ether | 1,100 | | X | | | |
| 2-chloronaphthalene | 100 | | X | | | |
| 2-hexanone | 500 | | X | | | |
| 2-propanol | 20,000 | | X | | | |
| 4-bromofluorobenzene | | | | | | |
| 4-methyl-2-pentanone | 700 | | X | | | |
| 4-nitrophenol | 40 | | X | | | |
| acetone | 5,000 | | X | | | |
| acrolein | 400 | | X | | | |
| acrylonitrile | | | | | | |
| alachor | | | | X | | |
| aldicarb | | | | X | | |
| aldrin | | | | | X | |
| aluminum | 6,000 | | X | | | |
| ammonia (as N) | 600,000 | | X | | | |
| antimony | 9,000 | | X | | | |
| arsenic | 100 | | X | X | X | X |
| atrazine | | | | X | | |
| barium | 10 | | X | X | X | X |
| benzene | 500 | | X | X | | |
| beryllium | | | | | | |
| bicarbonate | | | | | | |
| BOD | 5,000,000 | | X | | | |
| boron | 200 | | X | X | | |
| bromobenzene | | | X | | | |
| bromochloromethane | | | X | | | |
| bromodichloromethane | | | X | | | |
| bromoform | | | X | | | |
| bromomethane | 400 | | X | | | X |
| butanol | 15,000 | | X | | | |

| Parameters | Generally Predicted Values for Municipal Solid Waste Landfills* ug/l | Surrogate Model Value | Basis for Inclusion on List: Expected in Leachate | 35 IAC Part 620 | 35 IAC Part 302 | 40 CFR 141.40 |
|---|---|---|---|---|---|---|
| n-butylbenzene | | | | | | X |
| sec-butylbenzene | | | | | | X |
| butyl benzyl phthalate | 150 | | X | | | |
| cadmium (total) | 100 | | X | X | X | X |
| calcium | 1,200,000 | | X | | | |
| carbofuran | | | | X | | |
| carbon disulfide | 6 | | X | | | |
| carbon tetrachloride | 400 | | X | X | | |
| chemical oxygen demand | 10,000,000 | | X | | | |
| chlordane | | | | X | X | |
| chloride | 3,000,000 | | X | X | X | X |
| chlorobenzene | 400 | | X | X | | X |
| chloroethane | 400 | | X | | | X |
| bis (2-chloroethoxy)methane | 25 | | X | | | |
| chloroform | 400 | | X | | | X |
| chloromethane | 400 | | X | | | X |
| bis (chloromethyl)ether | 400 | | X | | | X |
| o-chlorotoluene | | | | | | X |
| p-chlorotoluene | | | | | | X |
| chromium (total) | 50 | | X | X | X | X |
| chlorodibromomethane | | | | | | X |
| cobalt | 130 | | X | X | | |
| copper | 1,000 | | X | X | X | |
| p-cresol | | | | | | |
| cyanide | 300 | | X | X | X | |
| DDT | | | | | X | |
| dibromomethane | 10 | | X | | | X |
| m-dichlorobenzene | | | | | | X |
| o-dichlorobenzene | | | | | | X |
| p-dichlorobenzene | | | | X | | |
| dichlorodifluoromethane | 450 | | X | | | X |
| dichloromethane | | | | | | X |
| dieldrin | | | | | X | |
| diethyl phthalate | 200 | | X | | | |
| dimethyl phthalate | 60 | | X | | | |
| di-n-butyl phthalate | 150 | | X | | | |
| endrin | | | X | | | |
| ethyl acetate | 130 | | X | | | |
| bis(2-ethylhexyl)phthalate | 400 | | X | | | |
| ethyl methacrylate | | | | | | |
| ethylbenzene | 500 | | X | X | | X |
| ethylene dibromide (EDB) | | | | | | X |
| fluoride | | | | X | | |
| fluorotrichloromethane | | | | | | X |
| gross alpha (pCi/l) | | | | X | | |
| heptachlor | | | | X | X | |
| heptachlor epoxide | | | | X | X | |
| hexachlorobutadiene | | | | | | X |
| iodomethane | | | | X | X | |
| iron | 500,000 | | X | X | X | X |
| isophorone | 2,500 | | X | | | |
| isopropylbenzene | | | | | | X |
| p-isopropyltoluene | | | | | | X |
| lead | 500 | | X | X | X | X |
| lindane | .025 | | X | X | X | |
| magnesium | 500,000 | | X | | | |
| manganese | 20,000 | | X | X | X | |
| mercury | 10 | | X | X | | |
| methoxychlor | | | | X | X | |
| methylene chloride | 10,000 | | X | | | |
| naphthalene | 75 | | X | | | X |
| nickel | 1,000 | | X | X | | |
| nitrate | | | | X | X | |
| nitrobenzene | 120 | | X | | | |
| oil (hexane-soluable or equivalent) | | | | | X | |
| parathion | | | | | X | |
| pentachlorophenol | 400 | | X | X | | |
| pH | 5-9 | | | X | | |

| Parameters | Generally Predicted Values for Municipal Solid Waste Landfills* ug/l | Surrogate Model Value | Basis for Inclusion on List: Expected in Leachate | 35 IAC Part 620 | 35 IAC Part 302 | 40 CFR 141.40 |
|---|---|---|---|---|---|---|
| phenanthrene | 3 | | X | | | |
| phenols | 5,000 | | X | X | X | |
| polychlorinated biphenyls | | | | X | | |
| potassium | 500,000 | | X | | | |
| n-propylbenzene | | | | | | X |
| radium | | | | X | | |
| selenium | 50 | | X | X | X | |
| silver | 50 | | X | X | | |
| sodium | 1,500,000 | | X | | | |
| strontium - 90 | | | | X | | |
| styrene | | | | X | | X |
| sulfate | 1,000,000 | | X | X | X | |
| TDS | 10,000,000 | | X | X | X | |
| TOC | 6,000,000 | | X | | | |
| tert-butylbenzene | | | | | | X |
| tetrachloroethylene | 300 | | X | X | | X |
| tetrahydrofuran | 1,000 | | X | | | |
| thallium | 500 | | X | | | |
| tin | 2,000 | | X | | | |
| toluene | 2,000 | | X | X | | X |
| toxaphene | 2 | | X | X | X | |
| trichloroethylene(or ethene) | 400 | | X | X | | |
| trichlorofluoromethane | 150 | | X | | | |
| tritium | | | | X | | |
| vanadium | 30 | | X | | | |
| vinyl chloride | 60 | | X | X | | |
| vinyl acetate | | | | | | |
| xylenes (total) | 300 | | X | X | | |
| m-xylene | 200 | | X | | | X |
| o-xylene | | | | | | X |
| p-xylene | | | | | | X |
| zinc | 20,000 | | X | X | | |

* References


1. Gasper, James A. and Jeff M. Harris, Management of Leachate from Sanitary Landfills (for Browning Ferris Industries).

2. Dolan, David, Helen Keougl, R.L. O'Hara and Kevin O'Leary, 1991, A Comparison of Chemical Constituents in Industrial Hazardous Waste Municipal Waste Landfill Leachates (for Waste Management of North America, Inc.).

## Attachment 2 to Appendix C
## Routine Parameters

| FIELD PARAMETERS | STORET NUMBER |
|---|---|
| *Bottom of Well Elevation (ft. ref MSL) | 72020 |
| Depth to Water (ft. below land surface) | 72019 |
| Depth to Water (ft. from measuring point) | 72109 |
| Elevation of Groundwater Surface (ft. ref MSL) | 71993 |
| pH (units, unfiltered) | 00400 |
| Specific Conductance (umhos/cm, unfiltered) | 00094 |
| Temperature of Water Sample (deg F) | 00011 |

(* = Reported Annually)

| ROUTINE INDICATOR PARAMETERS | STORET NUMBER | CAS NUMBER |
|---|---|---|
| Filtered** | | |
| Ammonia as (N) | 00608 | 7664-41-7 |
| Arsenic | 01000 | 7440-38-2 |
| Cadmium | 01025 | 7440-43-9 |
| Chloride | 00941 | 6887-00-6 |
| Iron | 01046 | 7439-89-6 |
| Lead | 01049 | 7439-92-1 |
| Manganese | 01056 | 7439-96-5 |
| Mercury | 71890 | 7439-97-6 |
| Sulfate | 00946 | 4808-79-8 |
| Total Dissolved Solids (TDS, mg/l) | 70300 | |
| Unfiltered | | |
| Cyanide (Total) | 00720 | 57-12-5 |
| Phenols (Total Recoverable) | 32730 | 179-80-5 |
| Total Organic Carbon (TOC) | 00680 | |
| Total Organic Halogens (TOX) | 78115 | |

(**Samples shall be analyzed for both the dissolved and total concentrations of inorganic parameters during the initial background sampling period.)

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State of Illinois
ENVIRONMENTAL PROTECTION AGENCY

Mary A. Gade, Director

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# Appendix D to LPC-PA2

## INSTRUCTIONS FOR CHEMICAL AND PUTRESCIBLE WASTE LANDFILL DESIGN FEATURES

This Appendix sets out the type of information needed in addition to the general information requested in the LPC-PA2 Instructions. You should review Appendices A-G and Section VI of LPC-PA2 form to determine which are applicable to your facility. This Appendix explains how to document the detailed design features of all components of the site.

I. Design & Design Period

Provide the design period for all waste disposal units pursuant to 35 IAC 811.303. Also, if the unit is being designed as a chemical waste landfill (i.e. a facility which accepts only chemical waste), analyses must be provided demonstrating that all wastes to be disposed at the landfill meet the definition of chemical wastes. These analyses must further show that all wastes entering the unit shall be compatible and will not react to form a hazardous substance or gaseous products.

II. Foundation and Mass Stability Analysis and Design

A. Provide a foundation study and analysis performed by or under the supervision of a Registered Professional Engineer showing that the unit demonstrates compliance with 35 IAC 811.304 and 811.305.

B. Provide the following information in connection with the foundation study and analysis:

1. Results of tests performed on foundation materials and include the justification for the appropriateness of the test;

2. Estimated depth of settlement or swell of the foundation of the unit;

3. Diagrams and cross sections of any proposed sub-base or foundation construction;

4. Specifications for the soil to be used for the foundation construction shall include, but not to be limited to, soil classification, permeability, moisture content, moisture-density relationship, plasticity, and strength; and

5. Discuss how the construction quality assurance program will be implemented for the foundation pursuant to 35 IAC 811.Subpart E. (Refer to Appendix E.)

III. Design of Liner System

A. Demonstrate the minimum requirements of 35 IAC 811.306 for compacted clay liners are met by providing the following information:

1. Cross sections and plan views of the liner system;

2. Results of any field or laboratory tests demonstrating that the liner material complies with 35 IAC 811.306(d).

3. A description of the test liner, including:

   a. Diagrams and any supporting documentation showing that the test liner will be constructed and evaluated in accordance with 35 IAC 811.507(a); or

   b. A detailed description of the results of the test liner constructed in accordance with 35 IAC 811.507(a), if constructed prior to permit application;

(Note: A test liner constructed after initial permitting may require a permit modification to incorporate construction quality assurance requirements).

4. A description of construction methods and equipment to be utilized;

5. Side slope stability calculations;

6. A demonstration that the liner has been designed such that it shall remain functional throughout the design period; and

7. Discuss how the construction quality assurance plan will be implemented pursuant to 35 IAC 811, Subpart E. (Refer to Appendix E.)

B. To use geomembranes, the application must demonstrate compliance with 35 IAC 811.306(e) by providing the following minimum information:

1. A description of the physical properties of the geomembrane;

2. Documentation showing that the design of the geomembrane meets the minimum requirements of 35 IAC 811.306(e).

3. A description of the methods to seam the geomembrane in the field in compliance with 35 IAC 811.306(e)(5).

   a. A plan showing the proposed layout of the individual panels and the locations of all openings through the geomembrane;

   b. A cross section and description of how opening in the geomembrane will be constructed to minimize leaks; and

   c. Discuss the construction quality assurance program pursuant to 35 IAC 811, Subpart E for proper construction, seaming and inspection of the geomembrane. (Refer to Appendix E.)

C. For Slurry Trenches and Cutoff Walls provide the following information:

1. A description of the slurry trench or cutoff wall, including documentation of cross sections, material specifications and methods of construction to demonstrate compliance with 35 IAC 811.306(f).

Also provide a short narrative describing how the following tests will be accomplished:

Note: All tests shall be performed in accordance with appropriate ASTM, API, Corps of Engrs., or equivalent methods.

a. Laboratory testing of slurry wall material prior to the placement of each 300 linear feet of slurry wall for the following:

   i. Bentonite

      - Swelling index
      - Layer permeability
      - Colloidal yield
      - Cation exchange capacity

   ii. Bentonite/Soil Mixture, with site water

      - Grain size analysis of aggregate
      - Bentonite content
      - Hydraulic conductivity
      - Wet density test

b. Testing the bentonite slurry proposed for use mixed under field conditions with site water for the following:

   i. Bentonite slurry

      - Bentonite content
      - Apparent viscasity, plastic viscosity and yield
      - Density
      - Gel strength and ten minute strength
      - pH
      - Filtration loss
      - Filter cake - thickness and visual description of filter cake strength
      - Sand content

   ii. Water - free of oil and organic matter (weekly test)

      - pH
      - Chloride
      - Specific Conductance
      - Alkalinity/Hardness
      - Volatile Organic Compounds

c. Testing of backfill material each 300 linear feet of cut-off wall for the following.

   - Mixing Process
   - Grain size analysis
   - Slump

d. Testing procedure and frequency to determine the backfill material has achieved a hydraulic conductivity equal to or less than 1 x $10^{-7}$ cm/sec.

e. Show that a minimum of three feet of slurry head shall be maintained in the excavation above the maximum anticipated groundwater level and the slurry head should not fall one foot below the ground surface elevation.

2. Location and description of the boreholes, including the results of any testing; and

3. Discuss the construction quality assurance plan, pursuant to 35 IAC 811, Subpart E. (Refer to Appendix E.)

D. For Alternative Liner Technology provide the following information:

Provide a complete description of the technology, including documentation demonstrating that the technology will perform as required by 35 IAC 811.306(g).

IV. Leachate Control System

A. Provide documentation for the leachate drainage and collection system to show how it will comply with 35 IAC 811.307 and 811.308. All applications to develop putrescible and chemical waste landfills must include a leachate drainage and collection system plan. The plan and documentation should include:

1. A plan view of the leachate collection system showing: piping locations, leachate level monitoring locations, cleanouts, manholes, sumps, leachate storage structures and other related information. The plan for the system must also discuss how any stormwater which contacts wastes will be collected and managed as leachate. Specific discussions of runoff from the open face and areas which only have daily cover applied should be provided.

2. Cross sections of manholes, sumps, cleanouts, connections, drainage blanket and other appurtenances.

3. A description of the design and materials including all calculations, assumptions and information which were used in the design. A stability analysis should be included which demonstrates that the side slopes will maintain the necessary static and seismic safety factors during all phases of operation. An analysis of or documentation that all materials are compatible with the wastes they are expected to be exposed to.

4. A maintenance plan which describes the methods used to clean and maintain the system.

5. A discussion of how the construction quality assurance program will be implemented. (Refer to Appendix E.)

B. Leachate Management System

Every landfill which is required to have a leachate drainage/collection system must also submit a leachate management plan for the disposal of collected leachate. The leachate management system may consist of any combination of storage, treatment, pretreatment and disposal options which satisfy the requirements of 35 IAC 811.309. The following should be included:

1. A description of the management system which should include any required documentation such as:

   a. The approved NPDES permit or, if the permit is pending, a copy of the NPDES permit application;

   b. Documentation to demonstrate that the off-site treatment works meets the requirements of 35 IAC 811.309(e)(1); or

   c. Pretreatment authorization, if necessary from the off-site publicly owned treatment works pursuant to 35 IAC 310.

   d. Requests for authorization to recycle leachate must include the following:

      i. A demonstration that the unit satisfies the criteria of 35 IAC 811.309(f)(1);

      ii. Estimates of the expected volume of excess leachate, as defined in 35 IAC 811.309(f)(3);

      iii. A plan for the disposal of excess leachate, as defined in 35 IAC 811.309(f)(3);

      iv. Layout and design of the leachate distribution system; and

      v. Pursuant to 35 IAC 811.309(f)(6), a demonstration that the daily and intermediate cover is permeable, or a plan to remove daily and intermediate cover prior to additional waste disposal.

   e. Design of tanks, lagoons, and all other treatment or storage units;

   f. A map showing the location of all units, piping and monitoring stations; and

   g. A description of the leachate monitoring system, the location of the sampling points, including all parameters to be monitored and the frequency of monitoring. Note: 35 IAC 811.309(g) mandates the minimum initial monitoring frequency and testing for certain parameters.

V. Landfill Gas System

A. For putrescible facilities, provide documentation for the landfill gas monitoring system to show how it will comply with 35 IAC 811.310 and include the following:

All putrescible waste disposal facilities must have a gas monitoring system to monitor the buildup and composition of landfill gas.

1. A narrative and plan sheets describing the most likely paths of migration for gas generated by the unit and demonstrating that the proposed gas monitoring program will detect any gas buildup and/or migration. A predictive gas flow model may be used as part of this description and demonstration -- 812.309(a) and 811.310(b)(1), (2) and (3).

2. Detail drawings and material specifications of the four types of gas monitoring devices required (i.e., devices within the waste unit, below ground devices around the unit, air ambient monitoring devices and continuous air monitoring devices within buildings) on site or near the facility if there is an indication of gas.

3. A map showing the locations of the below ground monitoring devices and the continuous air monitoring devices.

4. Documentation that the below ground gas monitoring devices satisfy the following requirements:

   a. Gas monitoring devices shall be placed at intervals and elevations within the waste to provide a representative sampling of the composition and buildup of gases within the unit.

   b. Gas monitoring devices shall be placed around the unit at locations and elevations capable of detecting migrating gas from the ground surface to the lowest elevation of the liner system or the top elevation of the groundwater, whichever is higher.

   c. Gas monitoring devices shall be constructed from materials that will not react with or be corroded by the landfill gas.

   d. Gas monitoring devices shall be designed and constructed to measure pressure and allow collection of a representative sample of gas.

   e. Gas monitoring devices shall be constructed and maintained to minimize gas leakage.

   f. The gas monitoring system shall not interfere with the operation of the liner, leachate collection system or delay the construction of the final cover system.

5. A description of the procedures and prerequisite weather conditions for performing ambient air monitoring including the location standards for placement of the monitoring devices and maximum wind speed.

6. A description (narrative or graphic) of the location of the continuous air monitoring devices inside the buildings within the facility (and nearby buildings if applicable).

7. A schedule specifying the frequency and minimum duration of gas monitoring.

8. Identification of the parameters that each type of monitoring device will be testing.

9. For applications that do not propose a gas collection system, the criteria that will be used to determine when a landfill gas management system must be installed.

B. Landfill Gas Collection System

Landfill gas collection systems are optional for putrescible waste landfills except for those which have experienced problems with gas migration or odors and those which recycle leachate (see 35 IAC 811.311). Permit applications which propose landfill gas collection systems must include the following information:

1. A map and detail drawings showing the location of the collection points and the layout and design of the collection system;

2. A description of and specifications for all machinery, compressors, flares, piping and appurtenances necessary to the system;

3. Documentation or assurance that the gas collection system meets the following standards:

   a. The system is designed and will be operated such that the limits described in 35 IAC 811.311(a)(1), (a)(2) and (a)(3) will not be exceeded;

   b. The gas collection system shall transport gas to a central point or points for processing for beneficial uses or disposal in accordance with the requirements of 35 IAC 811.312;

   c. The gas collection system has been designed to function for the entire design period;

   d. All materials and equipment used in construction of the system have been rated by the manufacturer as safe for use in hazardous or explosive environments and shall be resistant to corrosion by constituents of the landfill gas;

   e. The gas collection system has been designed to withstand all landfill operating conditions, including settlement;

   f. Provisions have been made for collecting and draining gas condensate to a management system meeting the requirements of 35 IAC 811.309;

g. The gas collection system shall not compromise the integrity of the liner, leachate collection or cover systems; and

h. The gas collection system shall be equipped with a mechanical device, such as a compressor, capable of withdrawing gas, or has been designed so that a mechanical device can be easily installed;

4. A description of the criteria that will be used to determine when operation of the gas collection system shall be discontinued;

5. A description of the testing procedures that will be used to assure that the lines from the collection points to the gas processing or disposal facility are air tight; and

6. A plan for disposal of the condensate.

C. Landfill Gas Disposal or Processing System

All permit applications which propose a gas collection system must also propose a gas disposal system. The gas disposal system can be either an on-site or an off-site facility.

1. For on-site facilities (either flare systems or facilities which process the gas for beneficial use) the following information must be provided:

a. A map showing the location of the facility;

b. Engineered drawings showing the layout and details of landfill gas processing and disposal system, including compressors, blowers, raw gas monitoring systems, devices used to control the flow of gas from the unit, flares, gas treatment devices, air pollution control devices and monitoring equipment;

c. A copy of the approved air discharge permit or, if the permit is pending, a copy of the air discharge permit application required pursuant to 35 IAC 200 thru 245; and

d. A list of the parameters and constituents for which the gas shall be monitored.

2. For off-site processing the facilities the following information must be provided:

a. A list of the parameters and constituents for which the gas shall be monitored;

b. A description of the means by which the gas shall be conveyed from the landfill to the off-site processing facility; and

c. Documentation that the off-site processing facility meets the following requirements:

i. The solid waste disposal facility will contribute less than 50 percent of the total volume of gas accepted by the gas processing facility. (Otherwise, the processing facility must be considered a part of the solid waste management facility.) and

ii. The gas processing facility is sized to handle the expected volume of gas.

D. Construction Quality Assurance Program

The landfill gas monitoring system (and the collection and disposal/processing systems, if proposed) must be constructed in accordance with a construction quality assurance program. Accordingly, the permit application must include a sampling program based upon statistical sampling techniques and establishing criteria for acceptance or rejection of materials and construction operations.

VI. Surface Water Control

Describe how the landfill design controls surface water and demonstrates the following:

A. Runoff From Disturbed Areas

1. Runoff from disturbed areas resulting from precipitation events less than or equal to the 25-year, 24-hour precipitation event that is discharged to waters of the State will meet the requirements of 35 IAC 304.

2. All discharges of runoff from disturbed areas to waters of the State shall be permitted by the Agency in accordance with 35 IAC 309.

3. The design of discharge structures are such that flow velocities will not cause erosion and scouring of the natural or constructed lining, i.e. the bottom and sides of the receiving stream channel.

4. All drainage ways and swales are designed to safely pass the runoff from the 100-year, 24-hour precipitation event without scouring or erosion.

B. Diversion of Runoff From Undisturbed Areas

1. Runoff from undisturbed areas shall be diverted around disturbed areas unless it is impractical based on site-specific conditions.

2. Diversion facilities shall be designed to prevent runoff from the 25-year, 24-hour precipitation event from entering disturbed areas.

3. Runoff from undisturbed areas which becomes commingled with runoff from disturbed areas shall be handled as runoff from disturbed areas and treated accordingly.

4. All diversion structures shall be designed to have flow velocities that will not cause erosion and scouring of the natural or constructed lining, i.e., the bottom and sides, of the diversion channel and downstream channels.

5. All diversion structures shall be operated until the final cover is placed and erosion stability is provided by the vegetative or other cover meeting the requirements of 35 IAC 811.205 or 811.322.

C. Information on the location and construction schedule must be provided as follows:

1. Provide a map(s) with a scale of 1" = 200 feet showing the location of all surface water control structures. Indicate both disturbed and undisturbed areas and water sheds.

2. Provide detailed designs of all structures to be constructed during development of the facility and during the first five year operating period; and

3. Provide the estimated construction dates of all structures to be constructed beyond the first five year operating period.

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State of Illinois
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# APPENDIX E TO LPC-PA2

INSTRUCTIONS FOR PREPARING A CONSTRUCTION DOCUMENT FOR A CHEMICAL AND PUTRESCRIBLE WASTE LANDFILL

This Appendix sets out the type of information needed in addition to the general information requested in the LPC-PA2 Instructions. You should review Appendices A-G and Section VI of LPC-PA2 form to determine which are applicable to your facility. This Appendix explains what should be provided in a Quality Assurance Program.

I. Applicability and Qualifications

A. Identify each structure subject to the procedures and organizational framework for testing, observation, monitoring and documentation of the quality assurance requirements in 35 IAC 811 Subpart E.

B. Provide assurance that the operator will designate a third party contractor as the Construction Quality Assurance Officer (CQA officer) with the following responsibilities and qualifications:

1. The CQA officer will be responsible for inspections, testing and other required activities.

2. That the CQA officer will be a Illinois Registered professional engineer.

II. Activities

A. Describe activities which will demonstrate compliance with the following provisions:

1. How the CQA officer will provide supervision and explain the procedures for writing a daily summary report. It is recommended at minimum the officer personally be present on a weekly basis and more often during critical construction activities. Structures subject to quality assurance are:

a. Compaction of foundations and subgrades.

b. Installation of clay liners, geomembrance liner component, slurry trenches, cutoff walls; leachate collection system and gas control facilities.

c. Application of final cover.

d. Construction of ponds, ditches, lagoons and berms.

2. When the CQA officer is absent that the following document will be provided:

a. A written explanation for the CQA officer's absence.

b. A written designation of the person who will exercise professional judgement for the CQA officer and documentation that this person can function effectively.

c. A written statement by the CQA officer that he assumes full personal responsibility for inspections and reports prepared by the CQA designate.

3. Provide for each structure subject to this program, the activities an inspector will be responsible for.

III. Sampling

A. Provide a detailed description of a sampling program for each covered structure. Include the statistical sampling techniques and specific criteria for the acceptance or rejection of materials or structures and operations.

IV. Reports

A. Provide the information to be included in the daily summary report for each covered structure in accordance with 35 IAC 811.505(a). Include sample report forms, list of test equipment, materials etc.

B. Provide the information to be included in the daily inspection report for each covered structure in accordance with 35 IAC 811.505(b) and (c). Include sample report forms, inspection activities, sampling etc.

C. Provide the information to be included in the acceptance reports for each covered structure in accordance with 35 IAC 811.505(d). Include sample reports and any other applicable information.

V. Additional Information is Required for Consideration of Foundations and Subbases

A. A site investigation must include how it was carried out in accordance with the plans and how any unexpected conditions or modifications are to be shown and explained on as built plans.

B. The CQA officer must observe the soil and rock surfaces for joints, fractures, depressions and sound deposits and has documented their filling or replacement.

C. Documentation must ensure there were no moisture seeps and that soft, organic or other undesirable material was removed.

VI. Additional Information is Required for the Construction of the Test Liner and Fill Before Construction F the Actual, Full-Scale Compacted Earth Liner

A. A plan to document how the following were or will be met must be provided:

1. The test liner was constructed from the same soil material, design specifications, equipment and procedures as proposed for the full-scale liner;

2. The test fill was at least four times the width of the widest piece of equipment to be used;

3. The test fill was long enough to allow the equipment to reach normal operating speed before reaching the test area;

4. At least three lifts were construct;

5. The test fill were tested as described below for each of the following physical properties using tests to ensure a statistically valid sample size:

   a. Field testing techniques shall be used to determine the hydraulic conductivity.

   b. Samples shall also be tested in the laboratory for hydraulic conductivity. The laboratory results shall be evaluated to determine if there is a statistical correlation to the field testing results.

   c. Other engineering parameters, including but not limited to particle size distribution, plasticity, water content, and in-place density, that are needed to evaluate the full-scale liner shall be determined; and

6. Additional test fills were constructed for each time the material properties of a new borrow source changes or for each admixture or change in equipment or procedures.

B. If documentation is available to demonstrate that a previously constructed liner meets the requirements of Part VI above construction of a test fill or the requirements for an additional test fill may be omitted. Documentation of how a full-scale liner or a test fill has been previously constructed should be provided.

C. State how the CQA officer will inspect the construction and testing of test fills to ensure that these requirements are met. During construction of the actual, full-scale compacted liner, the CQA officer shall ensure the following:

   a. Use of same compaction equipment as used in test fill;

   b. Use of same procedures, such as number of passes and speed;

   c. Uniformity of coverage by compaction equipment;

   d. Consistent achievement of density, water content and permeability of each successive lift;

   e. Use of methods to bond successive lifts together;

   f. Achievement of liner strength on sidewalls;

g. Contemporaneous placement of protective covering to prevent drying and desiccation, where necessary;

h. Prevention of the placement of frozen material or the placement of material on frozen ground.

i. Prevention of damage to completed liner sections; and

j. That construction proceeds only during favorable climatic conditions.

VII. Additional Informations Required for the Construction of a Geomembrane Liner. Describe the Information Which Will be Provided to Ensure the Following Requirements Have Been Met:

A. That the bedding material contains no undesirable objects;

B. That the placement plan has been followed;

C. That the anchor trench and back-fill are constructed to prevent damage to the geomembrane;

D. That all tears, rips, punctures, and other damage are repaired, and

E. That all geomembrance seams are properly constructed and tested in accordance with the manufacturer's specifications.

VIII. Additional Information is Required for the Construction of Leachate Collection System. Describe the Information Which Will be Provided to Ensure the Following Have Been Met:

A. That pipe sizes, material, perforations, placement and pipe grades are in accordance with the design.

B. That all soil materials used for the drainage blanket and graded filters met the required size and gradation specifications in the design plan are placed in accordance with the design plant.

C. That all prefabricated structures are inspected for conformity with design specifications and for defective manufacturing.

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# APPENDIX F TO LPC-PA2

## INSTRUCTION FOR CLOSURE PLAN AND POST-CLOSURE CARE PLANS FOR PUTRESCIBLE AND CHEMICAL WASTE LANDFILLS

This Appendix sets out the type of information needed in addition to the general information requested in the LPC-PA2 Instructions. You should review Appendices A-G and Section VI of LPC-PA2 form to determine which are applicable to your facility. This Appendix explains the information required in the Closure and Post-Closure Plans.

I. Closure Plan

The closure plan must at a minimum include the following:

A. A map showing the configuration of the facility after closure of all units, with the following:

1. The contours of the proposed final topography (after placement of the final cover) of all disturbed areas and showing how the final contours blend with the surrounding topography;

2. A scale of 1" = 200' (or greater) and a contour interval of two feet (5 foot or 10 foot contour intervals may be used on slopes steeper than 5:1); and

3. The location of all facility-related structures to remain as permanent features after closure;

B. Identification of the "assumed closure date" (i.e. the date during the next permit term on which the costs of premature final closure of the facility will be greatest);

C. Steps necessary for the premature final closure of the site at the assumed closure date;

D. Steps necessary for the final closure of the site at the end of its intended operating life;

E. Steps necessary to prevent damage to the environment during temporary suspension of waste acceptance. (This is necessary only if the operator wants a permit which would allow temporary suspension of waste acceptance at the site without initiating final closure.);

F. A description of the steps necessary to decontaminate equipment during closure;

G. An estimate of the expected year of closure;

H. Schedules for the premature and final closure, which shall include, at a minimum:

1. Total time required to close the site; and

2. Time required for closure activities which will allow tracking of the progress of closure; and

I. A description of methods for compliance with all closure requirements of 35 IAC, Part 811. This will necessitate the following information:

1. Provide estimates of settling rates as they relate to design, construction, and maintenance of the final cover system.

2. A demonstration (i.e., calculations) that the final slope will have a Static Safety Factor of at least 1.5 and a Seismic Safety Factor of at least 1.3. Both short term (i.e., the design period) and long term (tens or hundreds of years) Safety Factors must be calculated.

3. Documentation must be provided that shows that the final slope vegetation and other stabilization procedures will meet the following standards:

a. All final slopes shall be designed and constructed to a grade capable of supporting vegetation and which minimizes erosion;

b. All slopes shall be designed to drain runoff away from the cover and which prevents ponding. No standing water shall be allowed anywhere in or on the unit;

c. Vegetation shall be compatible with (i.e. grow and survive under) the local climatic conditions;

d. Vegetation shall require little maintenance;

e. Vegetation shall consist of a diverse mix of native and introduced species consistent with the post-closure land use; and

f. Temporary erosion control measures, including, but not limited to, the application (alone or in combination) of mulch, straw, netting, or chemical soil stabilizers, shall be undertaken while vegetation is being established.

g. Vegetation shall be tolerant of the landfill gas expected to be generated;

h. The root depth of the vegetation shall not exceed the depth of the final protective cover system; and

i. Structures Constructed Over the Unit:

i. Structures constructed over the unit must be compatible with the land use;

ii. Such structures shall be designed to vent gasses away from the interior; and

iii. Such structures must in no way interfere with the operation of a cover system, gas collection system, leachate collection system or any monitoring system.

4. Final cover must have two layers (i.e. a final protective layer on top of a low permeability layer). The following information must be provided:

a. For Final Protective Layer:

i. Specification of the thickness of the final cover (minimum: 3 feet);

ii. A description of the soil including a demonstration that it can support the proposed vegetation;

iii. Identification of the source of final cover and a demonstration that the proposed source contains an adequate volume of suitable soil; and

iv. A sampling program, based on statistical sampling techniques, that establishes criteria for acceptance or rejection of materials and construction operations to be used in the construction quality assurance program.

v. A demonstration that the final protective layer is sufficiently thick to protect the low permeability layer from root penetration and freezing and support the proposed final land use.

vi. Assurance that the final protective layer shall be installed soon enough after the low permeability layer is constructed to prevent desiccation, cracking, freezing or other damage to the low permeability layer.

b. Low Permeability Layer (may be soil, geomembrane or other material):

i. Design specifications (i.e., material specifications, thickness, hydraulic conductivity, and compaction, if applicable);

ii. A demonstration that a low permeability layer meeting the design specifications will also meet or exceed the performance of a compacted soil layer 3 feet thick with a hydraulic conductivity of $1 \times 10^{-7}$ cm/sec.

iii. Identification of the source and a demonstration that the proposed source contains an adequate volume suitable soil (if soil is going to be used to construct the low permeability layer).

iv. If the low permeability layer will be a geomembrane, a demonstration that it will have the strength to withstand

the stress imposed by the waste stabilization process and a description of the prepared base over which the geomembrane will be placed.

v. A description of the construction techniques that will be used in installing the low permeability layer.

vi. A description showing how the low permeability layer will tie into the liner system.

vii. A sampling program based on statistical sampling techniques and establishing criteria for acceptance or rejection of materials and construction operations to be used in the construction quality assurance program.

5. Calculations demonstrating that all drainage ways and swales have been designed to accommodate runoff from a 100 year, 24-hour precipitation event without scouring or erosion.

II. Post-Closure Care Plan

The post-closure care plan must, at a minimum, include the following:

A. Descriptions of the inspection and monitoring schedules, the inspections themselves, and the criteria for performing maintenance for the following systems:

1. Final cover.

2. Landfill gas monitoring program.

3. Landfill gas collection and disposal/processing facilities (if proposed).

4. Leachate monitoring, collection and disposal systems.

5. Groundwater monitoring program.

B. Criteria for reducing the frequency of inspection of the final cover and the frequency of monitoring gas, leachate and groundwater.

C. Criteria for ceasing to inspect the final cover, ceasing to monitor gas, leachate and groundwater; and ceasing to operate the gas and leachate management systems.

NOTE: If any of the post-closure care information is contained in other reports it may be included in the post-closure care plan by reference.

III. Cost Estimates

The following information must be provided:

A. Closure Cost

1. The itemized cost of applying final cover to the entire area that will be filled during the period starting at the beginning of the permit term and ending on the assumed closure date.

2. The cost of completing the gas monitoring and collection systems and the runoff control structures.

3. The cost of equipment decontamination.

4. The cost of certification of closure.

B. Post-Closure Care Cost

1. The itemized cost of carrying out all of the activities described in the post-closure care plan.

2. Calculations determining the present value of providing post-closure care based on the following assumptions:

   a. Landfill operations will cease on the assumed closure date.

   b. Post-closure care shall continue throughout the remainder of the design period with no reduction in the frequency or stringency of any post-closure care activity except as allowed by 35 IAC 811.111(c)(1)(A).

   c. The interest rate shall be 4 percent per annum and there shall be no inflation.

3. The present value of the post-closure care cost estimate should be calculated as follows:

   a. Present Worth on the Assumed Closure Date of Annual Costs Based on First of the Year Payments

$$P_1 = A + A \frac{(1 + i)^n - 1}{i (1 + i)^n}$$

Where: $P_1$ = Present Worth on the Assumed Closure Date
A = Annual Cost of Post-Closure Care
i = Interest Rate = 4% = 0.04
n = Number of Years in the Post-Closure Care Period -1

Note: If the assumed closure date is within one (1) year of the present, $P_1$ is the Post-Closure Cost Estimate. If the assumed closure date is more than one (1) year from the present, go on to the next step.

b. Current Present Worth

$$P_2 = F \frac{1}{(1 + i)^N}$$

Where: $P_2$ = Current Present Worth
F = Present Worth on Assumed Closure Date = $P_1$
i = Interest Rate = 4% = 0.04
N = Number of Years from Assumed Closure Date to Present -1

c. Example

Let's calculate the present value of the post-closure care cost estimate for a situation in which the annual cost estimate for post-closure care is $50,000/year; the post-closure care period is 30 years; and the assumed closure date is 4 years, 6 months from the present.

i. Step 1

$$P_1 = 50{,}000 + 50{,}000 \frac{(1 + 0.04)^{29} - 1}{0.04\ (1 + 0.04)^{29}}$$

$$P_1 = \$899{,}186.00$$

ii. Step 2

$$P_2 = 899{,}186.00 \frac{1}{(1 + 0.04)^{3.5}}$$

$$P_2 = \$783{,}850.00$$

4. If the reduction described in Step 3(b) is used (and a permit is issued), the permit letter will include a schedule requiring the operator to post additional financial assurance on the anniversary of the date that the permit is issued. This will be done until the amount of financial assurance reaches the $P_1$, value calculated in Step 3(a). Using the situation given in 3c., the schedule would be as shown in the table on the next page.

| Date | Amount of Financial Assurance Required for Post-Closure Care* |
|---|---|
| Day Permit is Issued# | $783,850 |
| First Anniversary | $815,204 |
| Second Anniversary | $847,812 |
| Third Anniversary | $881,725 |
| Fourth Anniversary | $899,186 |

* Financial Assurance is also required for closure. However, since the closure cost estimate is not reduced to its present value, an annual adjustment is not needed.

\# Financial Assurance does not need to be posted with the Agency until the Significant Modification to Obtain Operating Authorization has been submitted. Nevertheless, the day, that the permit approving development of the facility to 35 IAC 811 and 812 (and 814 for existing facilities) standards is issued, shall be the anniversary date for adjusting the post-closure care financial assurance.

C. Sum of the Closure Cost Plus the Present Value of the Post-Closure Cost.

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# APPENDIX G TO LPC-PA2

## INSTRUCTIONS FOR PREPARING OPERATING AND REPORTING PLANS FOR CHEMICAL AND PUTRESCIBLE WASTE LANDFILLS

This Appendix sets out the type of information needed in addition to the general information requested in the LPC-PA2 Instructions. You should review Appendices A-G and Section VI of LPC-PA2 form to determine which are applicable to your facility. This Appendix explains how to describe an operating and reporting plan for the facility.

I. Operating Plan

Provide a written description of the facility with supporting documentation describing the procedures and plans that will be used at the facility to comply with the requirements of 35 IAC 811 and any other applicable Parts of 35 IAC: Chapter I. Such description shall include, but not be limited to the following information:

A. The type of waste disposal units and the types of wastes expected in each unit. If the landfilling of shredded waste is planned, include documentation to demonstrate compliance with 35 IAC 811.303(b), including a description of the mechanical shredder proposed for use.

B. The manner in which waste will be placed and compacted to comply with 35 IAC 811.105 and 811.321(a) and (b). Describe equipment to be used, number of passes, density of waste received, compacted density, daily volume, etc.

C. A description of how units will be developed to allow contemporaneous closure and stabilization pursuant to 35 IAC 811.110, 811.111, 811.204, 811.205 or 811.322. The description shall include the filling sequence for each disposal unit and the closure sequence for the facility as a whole.

D. Describe how wastes are loaded, unloaded and moved within the site; provide the estimated traffic volume, number and types of transporting vehicles and other equipment and identify any safety procedures used to prevent accidents during waste transfer operations;

E. The number and duties of employees - including person(s) directly responsible for operations of the facility.

F. The days and hours of operation (include both "business" and other operating hours);

G. Operation of the leachate collection system:

1. Describe the method and frequency for monitoring leachate. Include personnel, equipment and record keeping procedures.

2. Describe the maintenance plan. Include procedures and scheduling for routine maintenance, inspection programs and corrective action.

3. Describe the management of leachate. Provide the protocol and schedules for inspection, handling and removal.

H. Operation of the gas monitoring and management system:

1. Describe the method and frequency for monitoring for gas migration and generation. Include personnel, equipment and record keeping procedures.

2. Describe the maintenance plan. Include procedures and scheduling for routine maintenance, inspection programs and corrective action.

3. Describe the management of gas and condensate, when collected. Provide the protocol and schedules for inspection, handling and removal.

I. Operation of the groundwater and surface water monitoring systems:

1. Describe the method and frequency for sample collection. Include personnel, equipment and record keeping procedures.

2. Describe the routine inspection and maintenance plan to ensure samples are collected and representative of the water being monitored.

J. A method used to screen loads of waste coming into the facility to assure only permitted waste is received. Include a demonstration of compliance with 35 IAC 811.323 and Part 811, Subpart D. NOTE: The load checking program must screen all wastes which are banned from landfilling (such as batteries, landscape waste, etc.) as well as screening for hazardous wastes. Also, a description of the procedure, that will be used in managing any banned or hazard wastes which are discovered by the load checking program, must be included.

K. Intermediate Cover

1. Provide a description of the soil that will be used for intermediate cover including its classification and approximate hydraulic conductive, unless only alternative intermediate cover material is going to be used.

2. If an alternate material (i.e. something other than soil) is proposed for intermediate cover, provide a description of the material and a demonstration that it will be as effective as 1 foot of compacted clean soil.

3. Describe when the intermediate cover will be applied, how thick it will be, how it will be graded and how it will be maintained.

Note: The intermediate cover may not be substituted for any part of the low permeability layer of the final cover system.

II. Reporting

A. A description of the method by which a representative sample of leachate is collected and tested in accordance with 35 IAC 811.309;

B. A description of the method by which a representative sample of landfill gas is collected and tested in accordance with 35 IAC 811.310;

C. A description of the method by which a representative sample of groundwater is collected and tested in accordance with 35 IAC 811.318(e).

D. A description of the reports to be filed in accordance with 35 IAC 811.403(c).

E. A description how the recordkeeping requirements of 35 IAC 811.405 for special waste related information will be satisfied.

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